

40 100 6/24/89
1982
SEBASTOPOL

SONOMA COUNTY LIBRARY

State of California
Department of Transportation

04-Son-12,116
PM 9.23/9.54, 26.5/27.5
Sebastopol N-S One Way
Couplet
04225 208650

CALIF. DEPT. OF TRANS 09/18/89
PROJECT REPORT, SEB\Y STREETS
(0) 1982 . R 388.1
1006 03 507722 01 1 (IC=2)



B100603507722011B

PROJECT REPORT, Sebastopol one-
way streets

TO: J. T. KASSEL, Chief
Office of Planning and Design

FROM: NORMAN KELLEY, District 4
District Director
(for Policy)

Date

M. E. HARDIN
Deputy District Director
(for Engineering)
Project Development

Date

INTRODUCTION

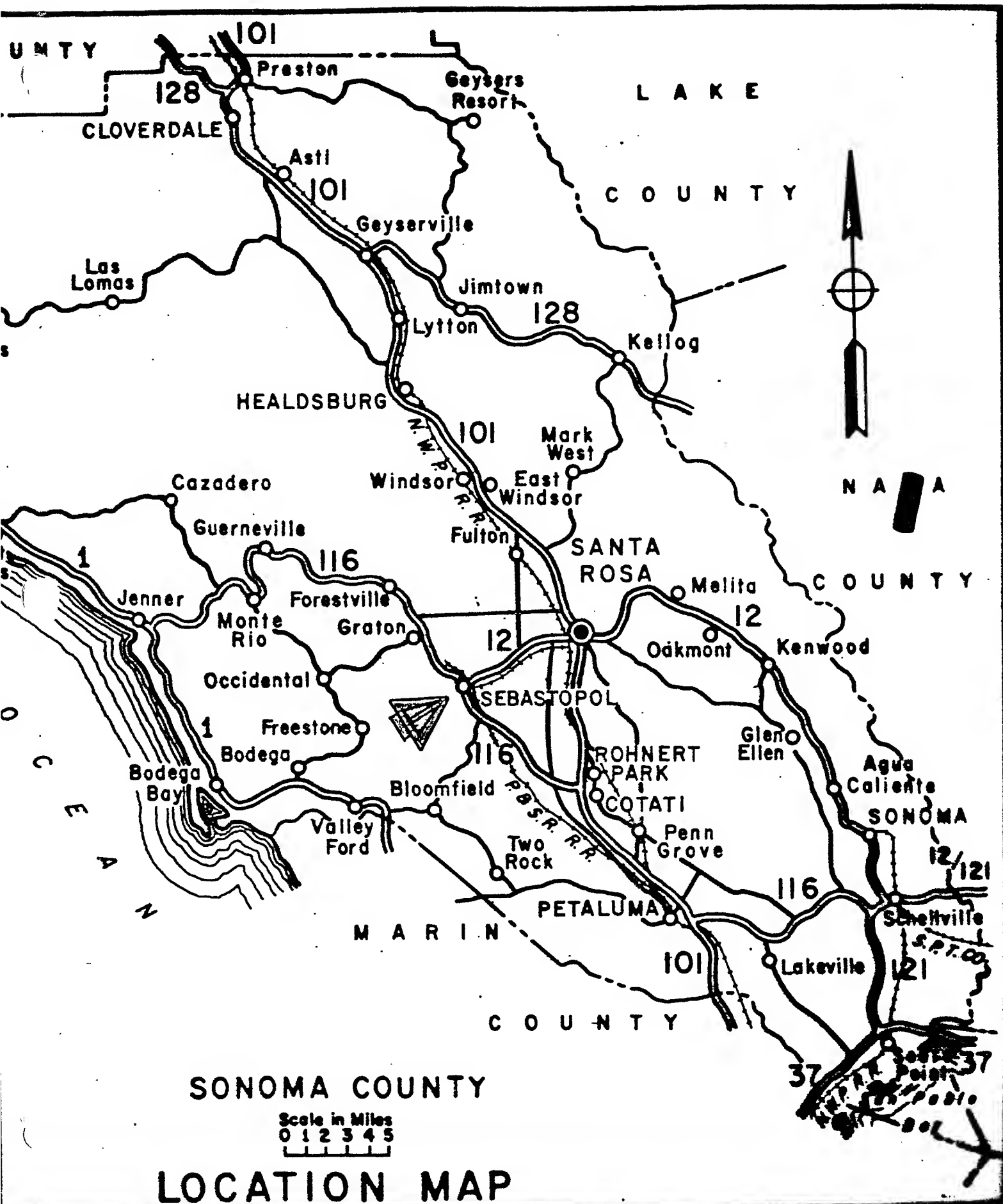
It is proposed to provide a one-way couplet in Sebastopol on
Route 116 by adding existing City streets to the State highway

BK-5-24-82

system to reduce traffic congestion. The contract construction cost is estimated to be \$90,000 to be funded from the Minor A HB 44 Program in the 1982-83 Fiscal Year.

A Special P.A.R. covering this proposal was approved by the B.R.C. on March 16, 1982, as stated in the approval memorandum dated March 19, 1982.

-la-



PROJECT CATEGORY

The Project is Category 2 - Minor since Route Adoption procedures are required to add City streets to the State highway. The Project Development Procedure will follow Category 5 steps since the City's efforts have already addressed needs, alternatives, effects and this recommended solution. Category 5 procedure will also allow the expeditious delivery of the project.

The Categorical Exclusion for the project was concurred with by Bob Ladin, FHWA area engineer, on _____.

BACKGROUND

Two State Highways, Routes 12 and 116, traverse the City of Sebastopol and they intersect in the Central Business District. The two highways along with Bodega Road (a westerly extension of Route 12) serve as the principle arterial streets in the community and to its service area. Although the population of Sebastopol is only about 4,600, an additional 20,000 people outside of the City utilize Sebastopol for business and shopping purposes. The highways are also major routes to the Russian River and Sonoma County coastal recreation area.

Congestion problems in downtown Sebastopol, caused by two State Highways through the City, have long been recognized. A 4-8 lane freeway on new alignment bypassing the downtown area to the east was carried in the Needs Inventory for many years. In 1975 this proposal was downscoped to a 2-lane bypass within expressway

right-of-way as part of the "McKinsey" Cost Effectiveness Study. \$12 million was carried in the 1977 Section 188.8 Needs Estimate for this downscoped bypass. During the 1981 Section 188.8 Need Estimate, this expresway ^{SA} proposal (estimated at \$15.3 million) was evaluated, and the expressway was further downscoped to a one-way couplet system estimated at \$600,000.

The City of Sebastopol officials acknowledged that funding for a major project to reduce the traffic congestion in the Central Business District by a freeway or other bypass highway cannot be realized in the foreseeable future. Consequently, in 1978, the City retained the firm of TJKM Transportation Consultants to make a detailed study of existing traffic conditons in and near the City of Sebastopol and furnish alternative recommendations to improve traffic flow. The project was undertaken in cooperation with the State of California Business and Transportation Agency, Office of Traffic Safety; the National Highway Safety Administration and the U. S. Department of Transportation, Federal Highway Administration.

The TJKM City of Sebastopol Traffic System Study was presented to the City in July 1978. A Public Hearing on the Study was held on September 18, 1978, where alternative courses of action were

addressed. The City Council voted 4-0 (one abstained because of conflict of interest) to approve the one-way concept on both Routes 12 and 116 as covered in the Study. The City, by letter dated October 4, 1978, to Caltrans requested the implementation of a one-way street system at the earliest possible date as detailed in Resolution No. 3042 (Exhibit 3).

A thorough analysis by Caltrans of the proposal followed. It was concluded that a north-south one-way couplet should be implemented and its operations evaluated before implementing the east-west couplet. The north-south one-way couplet would be a major project in order to bring the City streets up to State standards. Since it is a Caltrans policy to require local roads to be brought up to State standards before they can be adopted into the State Highway System and the project was considered to be cost effective even at the higher cost, the Sonoma County Board of Supervisors recommended inclusion of this project in the State Transportation Improvement Program as a cooperative project as covered in their Resolution No. 6318 (Exhibit 6). The project subsequently was recommended for inclusion in the 1980 Regional Transportation Improvement Program for construction in the 1980-81 Fiscal Year by the City's letter to MTC (Exhibit 5). MTC authorized inclusion of this project in the RTIP for local funds only (Exhibit 6). The CTC did not include this project in the STIP.

The Project Development Team meeting of September 24, 1980,

summarized the status of the project at that time (Exhibit 7). The project has been in limbo since that meeting until District Director John West's meeting with Mayor Anderson and City Manager Davis on November 6, 1981. Commitments were made at the meeting that Caltrans was very supportive of the one-way couplet concept and will make every effort to effect its implementation conditioned on City participation in funding and acceptance of continued maintenance of Petaluma Avenue and McKinley Street.

Interagency coordination has been established with MTC, FHWA, City of Sebastopol, Sonoma County, Petaluma and Santa Rosa Railroad, and the California PUC.

Economically disadvantaged, handicapped and transit-dependent communities have not been specifically contacted. There are adequate facilities for pedestrian and for non-motorized vehicles that will not be affected by the project. The opportunity ~~and~~ for public input has been afforded to all of the community in formal hearings and in public meetings.

DESCRIPTION OF EXISTING FACILITY

Existing Route 116 in the project limits is a typical City street that is about 50' wide curb to curb through most of its length.

The Petaluma and Santa Rosa Railroad has operating tracks in the center of the roadway. The railroad operates one round trip a day northerly of Burnett Street. Left turn lanes are predominant in the track area. Route 116 is locally known as North Main Street from Healdsburg Avenue to Sebastopol Road (Route 12) then South Main Street to its junction with Petaluma Avenue then *Gravenstein Highway South* ~~Petaluma Avenue~~ to the southerly City limits. It is a conventional highway with two way traffic, one lane in each direction with curb parking and left turn lanes.

The two City streets proposed to be added to the State Highway are McKinley Street from North Main Street to Petaluma Avenue and Petaluma Avenue from McKinley Street to its junction with South Main Street. These are both typical City streets that are 38' to 40' wide curb to curb. Petaluma Avenue is nearly parallel to North and South Main Streets and is a block to the east of existing Route 116.

A materials report was prepared and an evaluation was made for the structural adequacy of the roadbed of the City streets that will be required before Caltrans will accept the street for maintenance. McKinley Street and Petaluma Avenue are in fair condition and the streets are asphalt concrete surfacing. Storm drainage systems exist in the City streets; however, the adequacy of the system has not been assessed.

Both Routes 12 and 116 in the project limits are on the Federal Aid Primary system. Federal approval will be required.

TRAFFIC DATA

The project is a Traffic System Management (TSM) solution to the NOW need to reduce congestion in Sebastopol's Central Business Disrtrict. The usual traffic forecasting is not required because this is a short term solution that is not intended to provide capacity for significant growth. Traffic volumes and operating conditions were assessed in the noted 1978 Traffic System Study (TSS) by TJKM and Caltrans has prepared a traffic analysis and supplemental traffic analysis in October 1979 and April 1980, respectively. Peak period traffic operations; AM, Midday, and PM; were the focus of evaluation at major intersections (Exhibits 8 & 9).

The 1980 Traffic Volumes booklet prepared by Caltrans indicates 2,200 Peak Hour, 20,000 Peak Month ADT and 17,000 AADT North of Route 12 and 2,050 Peak Hour, 18,800 Peak Month ADT and 15,900 AADT south of Route 12. These data are not available on Petaluma Avenue; however, average weekday 2-way counts were 6,000 as stated in the TSS. Traffic counts are included in Caltrans Traffic Operations Report (Exhibits 8 & 9). Sebastopol and ~~Sonoma~~ County claim ADT is 40,000 VPD (Exhibits 5 & ~~6~~). *see attached*

Accident data for the three year period 01-01-79 through 12-31-81 were obtained from TASAS. On the 0.3 mile portion of Route 12 (Sebastopol Avenue), there were 61 accidents with 15 injuries and no fatalities. Of the 61 accidents, 57 of these (83%) involved another vehicle(s). The accident rate is 11.75 ACCIDENTS per MVM which is 450% of the statewide average of 2.59 ACC/MVM. The one mile portion of Route 116 in the project area experienced 133 accidents with 32 injuries and no fatalities. Of the 133 accidents, 120 involved another vehicle(s). The accident rate for Route 116 is 7.47 ACC/MVM which is 225% more than the expected rate of 3.29 ACC/MVM. It is expected that the accident rates will decrease as the traffic is redistributed. This will be part of the post project evaluation that will be made to determine if the couplet should remain in the State highway system. Accident detail records are in the project file.

DEFICIENCIES AND JUSTIFICATION

The problem that this project addresses is traffic congestion that exists in the Central Business District in Sebastopol that affects the State highways and the intersecting City streets.

The major traffic congestion point in the City occurs at the intersection of Main Street and Sebastopol Avenue - Bodega Road. During the evening peak hour, traffic backs up for both the

through and left turn movements. This congestion occurs on weekends as well as during the normal weekday period. Turning vehicles are blocked by through traffic in the intersection. One vehicle was observed to wait four signal cycles before completing the turn.

The reason for this congestion is two-fold. First, the streets are not wide enough to accommodate four lanes of traffic, plus left turn storage lanes on both streets, and secondly, virtually all of the arterial street traffic in Sebastopol must pass through this intersection.

The congestion also has a direct effect upon the very large volume of truck traffic. The Main Street and Sebastopol Avenue intersection width restrictions require trucks to use two lanes in order to make the turn. Under non-congested conditions, this maneuver can be accomplished easily. However with congestion, the truck driver has a real problem in negotiating the turn. It is not unusual for trucks to ride over the curb onto the sidewalk in making a turn under congested traffic conditions.

A potential problem caused by the congestion is the inability for ambulances or similiar emergency vehicles to reach accidents

occurring west of Sebastopol. While this has not yet been an actual problem, residents of the area are concerned about the potential.

Another traffic congestion point is the intersection of Sebastopol Avenue at Petaluma Avenue where the geometrics and traffic volume on Sebastopol Avenue make it difficult for the cross traffic to enter the intersection. Traffic signals are already warranted (Exhibit 18). Three warrantis are satisfied:

1. Minimum Vehiclular Volume;
2. Interruption of continous traffic and;
3. Accident experience.

The "Priority Index Number" for the HB 4 Program has been calculated but it is not now known where this project fits. Because of the rural setting, a level of service higher than urban areas is expected of travelers and residents. This expectation is not addressed in the priority calculation.

The project is the first priority after the Cloverdale bypass project recommended by Sonoma County by Resolution 6383 (Exhibit 4).

PROPOSAL DESCRIPTION

It is proposed to provide a north-south one-way couplet as shown on Attachment 3. This will be accomplished by adding McKinley

Street from North Main Street to Petaluma Avenue and Petaluma Avenue from McKinley Street to South Main Street to Route 116 in the State Highway system for northbound traffic. Existing Route 116 in those limits will be for southbound traffic. The directional traffic will be averaged rather than concentrated on North and South Main Streets and the most critical left turn conflicts will be eliminated. The geometrics of the "Y" intersection of Petaluma Avenue and South Main Street are conducive to forming the one-way couplet. There will be three lanes southbound to Burnett Street then two lanes with a lane drop at Petaluma Avenue to conform with the two lane, two-way highway. There will be two lanes on the northbound couplet.

The City of Sebastopol Traffic System Study identified the one-way couplet concept. In addition to the north-south couplet that this project report proposes, an east-west one-way couplet was proposed to complement the former to make it effective. Sebastopol ^{one} Road - Bodega Avenue would serve westbound traffic to High Street and eastbound traffic would use Burnett Street from High Street to Petaluma Avenue. Caltrans Highway Operations Report (Exhibit 8, page 5) in the evaluation analysis determined by rephasing the critical Main Streets - Bodega Avenue - Sebastopol Avenue intersection in the north-south couplet scheme, ILVs can be reduced from 1070 to 880 which may negate the need for an east-west couplet project. This supports the position that the north-south one-way couplet can be evaluated on its own merits as a single project and not only part of larger project.

The proposal is very cost effective. The construction cost to modify about 1.5 total centerline miles is only \$240,000 and the cost to the State is only \$150,000. This has been accomplished by application of TSM in a most effective manner. Essentially the only work required in the project limits is the removal of traffic stripes and pavement markings, addition of new stripes, markers and markings, new and relocated signs, modify the existing traffic signals at McKinley Street and Sebastopol Avenue on Route 116 and interconnect them with a new traffic signal installation at the Petaluma Avenue/Sebastopol Avenue intersection. This latter signal will be funded and constructed by the City under an encroachment permit. Based on redistributed estimated ADT for the couplet, traffic signal warrant is satisfied (Exhibit 19).

Since Petaluma Avenue and McKinley Street will need to be upgraded to meet the State's structural section requirements, Caltrans will defer acceptance of maintenance responsibilities to Sebastopol for those streets until the upgrading has been accomplished. The upgrading will require only 0.15' asphalt concrete overlay after distressed portions of the roadbed and curbs have been repaired (Materials Report, Exhibit 13).

Although Caltrans is allowed to pay for the cost of necessary structural upgrading, it is the policy to have the relinquishing agency bear the expense. The 1982 cost to upgrade is estimated to be \$105,000.

Geometric standards will be at least what now exists. Railroad

protection at the crossings will be preserved as directed by the California PUC. No non-standard design features have been identified in the project studies. Adequacy of storm drainage facilities on Petaluma Avenue have not been assessed since the traveled way northbound on the city street portion will remain in the central portion of the roadbed. There were no reports of sustained (or any) flooding on Routes 12 and 116 in the project area resulting ^{from} the severe storms in January 1982.

A Cooperative Agreement will not be required; however, there are features to be performed by the City of Sebastopol. Parking will need to be removed on Fannen Avenue, Walker Avenue and on Palm Avenue because those streets are narrow and improved circulation will be needed between the one-way streets, particularly in the area near the hospital at Palm Avenue. Sebastopol Avenue and portions of Petaluma Avenue will also require red curb. The intersection of Sebastopol Avenue (Route 12) and Petaluma Avenue will be signalized and reconfigured and the work will be accomplished by encroachment permit at City expense. This has been agreed to by Caltrans and the City to reduce paperwork instead of the usual share of cost determined by the number of legs for traffic signal projects. Caltrans will modify the signals at Route 116 intersections at McKinley Street and at Bodega Avenue - Sebastopol Avenue and will fund the interconnect to the traffic signals at the Petaluma Avenue/Sebastopol Avenue intersection. The City has agreed to maintain Petaluma Avenue and McKinley Street until they are brought up to State standards.

A revised Route Adoption will be required to effect the project because City streets will be added to the State Highway System to serve as northbound Route 116 for 0.8+ centerline mile. The District will prepare a reproducible route adoption map for OPD's use to process CTC resolution and route adoption documents as prescribed in Section 2-22 of the Project Development Procedures Manual.

Estimated Project Costs:

Construction Contract Cost

State - Modify Traffic Signals and

Interconnect \$ 90,000

City - New Traffic Signals and Modify

Intersection (By Encroachment Permit) \$ 90,000

Concurrent Work (By State Forces)

Signing \$ 27,000

Stripes and Markers (Includes Removal) \$ 27,000

Total Estimated Project Cost \$234,500

The estimated cost to bring the City streets up to State standards is \$105,000.

Estimated Maintenance Expenses:

In 1980/81 FY, maintenance costs were \$16,000 on existing Route 116 in the project limits.

Expected maintenance expense for McKinley Street and Petaluma Avenue is estimated to be \$15,000-\$20,000 per year without structural upgrading and about \$3,000 per year if the necessary asphalt concrete overlays are constructed.

It is believed that the project will be effective as proposed because turning conflicts in the Central Business District's most congested intersections will be reduced, traffic will be controlled and the north-south volumes will be averaged on two roadways rather than concentrated on one roadway. Work that merely enhances the area without providing traffic service benefits will not be included in the project.

PROPOSAL FUNDING

The project will be financed in the HB 44 Minor A Program 1982-83 F.Y.

Routes 12 and 116 in the project limits are both FAP routes and Federal funding participation in the State portion is expected.

Budgetary description follows:

In Sonoma County in Sebastopol on Route 12 from North and South Main Street to Petaluma Avenue and on Route 116 from McKinley Street to Petaluma Avenue.

Route 12 PM 9.23 to PM 9.31

Route 116 PM 26.65 to PM 27.30

Convert 2-lane conventional highway to a north-south one-way couplet, 2 lanes each way.

OTHER CONSIDERATIONS

The District Park and Ride Coordinator has indicated that Sonoma County officials are investigating a Park and Ride site on railroad property, adjacent to Route 116 south of the project. Caltrans will support the facility if land can be acquired by others.

Bus service is provided by Sonoma County Transit in Sebastopol. The existing transit route will not be significantly affected.

This project will have no effect on non-motorized transportation and on pedestrians. Since this project is all within the developed City limits of Sebastopol, the shoulder area is used for parking and is not conducive for bicycling. South Main Street south of Burnett Street should be more comfortable for bicyclists since there will be greater lane width than now exists. Handicapped curb cuts will be provided at the Petaluma Avenue/Route 12 intersection as part of the City's project. No other curb work is planned.

Provisions for oversize and extra legal loads, access to navigable waterways, wetlands and flood plains, bus and carpool lanes are not applicable to this project (Exhibit 16).

There are no permits or licenses required to perform the work in the project. Approvals are required for the railroad grade crossings protection by the PUC. A site meeting was held April 14, 1982, with PUC, Caltrans, and the Petaluma-Santa Rosa Railroad Company where grade crossing protection was reviewed. PUC makes the determination of the needs for protection. General Order 88 is not applicable to this project. (Exhibit 16)

Several structures on Petaluma Avenue and/or existing Route 116 may be eligible for the National Register of Historic Places. The State Historic Preservation Officer, FHWA and Caltrans, in consultation, have determined that the structures will not be affected by the project.

Air quality control plans have not been adopted; however, there is consistency with anticipated plans and strategies. The project is included in MTC's RTIP.

A service agreement will be prepared for work in the track/rail area of the Petaluma and Santa Rosa Railroad Company. Most of the work will be for electrical facilities appurtenant to the traffic signal installations.

Conservation and consumption of energy resources have not been technically evaluated. Consumption of petroleum products will be minimal - only a few days work to remove stripes and markings and to place new stripes and markings. The expected reduction of vehicle delay should reduce the consumption of petroleum products for some years. There will be electrical energy required for the operation of the new traffic signals, which is warranted regardless of the proposed project, at Route 12/Petaluma Avenue. There will not be any roadwork so recycling roadbed materials is not a consideration. Much of the electrical appurtuenances of the traffic signals to be modified will incorporate existing facilities into the project.

PROJECT REVIEWS

Robert Cady, FHWA Area Engineer, reviewed the project on _____ and determined that it is eligible for Federal funding. His review of the project is documented on Exhibit 15.

_____ of the CHP reviewed the project on _____
_____ and he had no adverse comments.

Charles Baker, Sebastopol Chief of Police and Traffic Engineer,
reviewed the project on _____ and concurs
with the proposal.

The geometrics and concepts were reviewed by Parker Hall,
Headquarters Reviewer, on _____. His
comments and suggestions are incorporated in the report.

Mr. M. K. Davis, City Manager, City of Sebastopol coordinated the
City Review. His comments dated _____
follow.

Mr. D. B. Head, director of Public Works, County of Sonoma
reviewed the project on _____. His comments
follow.

_____ of the Sonoma County Transit
District reviewed the project on _____.
His comments follow.

District review comments have been responded to and are incorporated in this Project Report.

In addition to the reviews, Mr. E. P. Thurban of the California Public Utilities Commission and Mr. C. L. Gerhardt of the Petaluma and Santa Rosa Railroad met with Caltrans officials at the site. Their concerns and comments are incorporated in the Project Report (Exhibit 16).

PUBLIC HEARING PROCESS

Public Meetings have been held by the City of Sebastopol.

A Public Hearing on the City of Sebastopol Traffic System Study was held September 18, 1978, (Exhibit 2) and adopted by Resolution No. 3042 (Exhibit 3) on October 2, 1978.

Caltrans held a Public Meeting in Sebastopol on May 3, 1982. A Public Meeting was also held by Caltrans as part of the agenda of the City Council Meeting held May 5, 1982 (Exhibit 17). The City council reaffirmed their support for the project. There was no ~~significant~~ public opposition to the one-way couplet proposal heard in these meetings.

Preceding these meetings, Notices of Public Meeting was advertised in the Santa Rosa Press Democrat, a daily newspaper, and copies of the Notice were hand-delivered to houses and

businesses along Petaluma Avenue, Mcinnley Street, North and South Main Street and the cross streets in between.

ROUTE ADOPTION

The project requires the inclusion of City streets into the State Highway System. The usual process as described in the PDPM will be undertaken on approval of this Project Report.

ENVIRONMENTAL CERTIFICATION

This action is a Categorical Exemption under Section 1510 of the Caltrans Regulations for the Implementation of the California Environmental Quality Act (CEQA).

It has been further determined by FHWA that this action is a Categorical Exclusion under Section 7-7-2 of the Federal-Aid Highway Program Manual.

The Categorical Exemption/Categorical Exclusion Determination is attached. (Exhibit 10).

E A HANSEN

D. W. REYNOLDS, ~~Acting~~ Chief

Environmental Planning Branch

RIGHT-OF-WAY CERTIFICATION

All work will be in the existing right-of-way. A Service Agreement will be required with the Petaluma and Santa Rosa Railroad Company. Existing utilities are located in areas of electrical work involving traffic signals (Right-Of-Way Data Sheets, Exhibit 11).

I have reviewed the right-of-way data contained in this Project Report and find it to be complete, current and accurate.

R. A. SPECK, Deputy Director
Right-Of-Way

Date

PROJECT PERSONNEL

~~Milton Louie, Chief~~

~~8-597-3274~~

~~Project Development Branch C~~

R. W. Crockett, Senior Engineer and

8-597-0384

Team Leader

Project Development Branch C

R. B. Perry, Project Engineer	-1597
Project Development Branch C	
 D. R. Radel, Environmental Planner	 -1254
Environmental Planning Branch	
 R. F. Day, Right-of-Way Coordinator	 -0525
D. E. Gaston, Railroad Coordinator	-2455
Right-of-Way Branch	
 J. M. Ellis, Acting Chief	 -2524
Transportation Planning Branch	

RECOMMENDATION

It is recommended that this Project Report be expeditiously approved and authority be granted to proceed with PS&E and Route Adoption processes. There is a need to complete the project concurrently with the City's project to modify the Route 12/Petaluma Avenue intersection -- an integral part of this project.

SCHEDULE

Project Report Approval	7-1-82
Plans, Specification and Estimate	
City Portion Subject to Caltrans Approval	6-1-82
Caltrans Portion	8-1-82
Route Adoption by CTC	8-1-82
Advertise Construction Project	
City Portion	9-1-82
Caltrans Portion	10-1-82

ATTACHMENTS

1. Location Map
2. Aerial Photos, 1" = 200'
3. Layout of Proposed N-S Couplet

EXHIBITS

1. Sebastopol Couplets, N-S & E-W, adopted by City

13. Materials Report

14. P.A.R. approval memorandum

15. FHWA Project Report Review

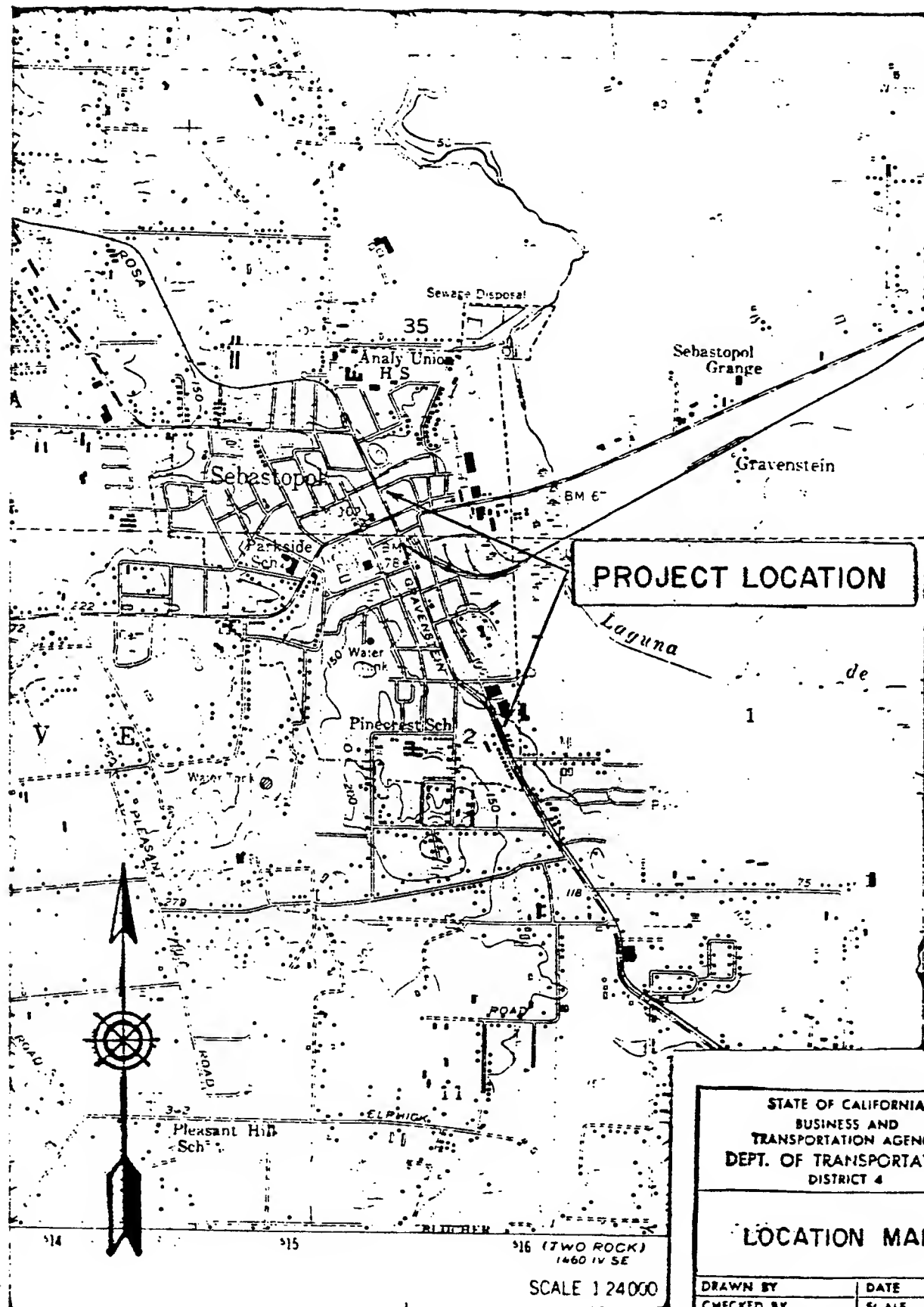
16. Summary of Joint Agency Review, Railroad Grade Crossings.

17. Minutes of City Council Meeting of May 5, 1982 - Caltrans
Public Meeting

18. Traffic Signal Evaluation Sheet (Existing Street Pattern)

19. Traffic Signal Warrants ~~for~~ (One-way Pattern)

20. Traffic Phase Diagram



STATE OF CALIFORNIA BUSINESS AND TRANSPORTATION AGENCY DEPT. OF TRANSPORTATION DISTRICT 4			
LOCATION MAP			
DRAWN BY		DATE	
CHECKED BY		SCALE	
CO.	RTE.	DR. NO.	



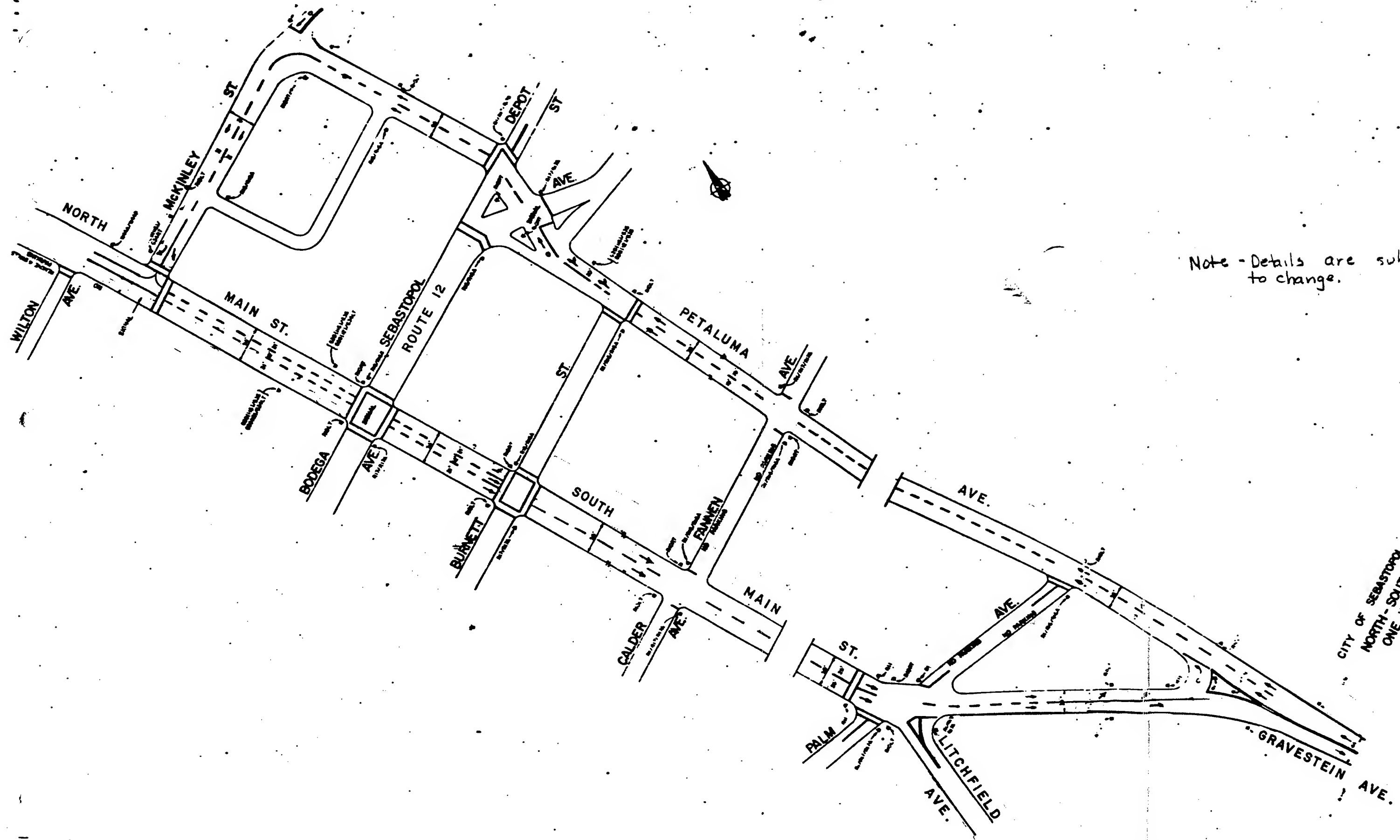




11-30-79 12:06
CALTRANS ASC 138040
04-4-4
04-50N 46 13-51
04-21



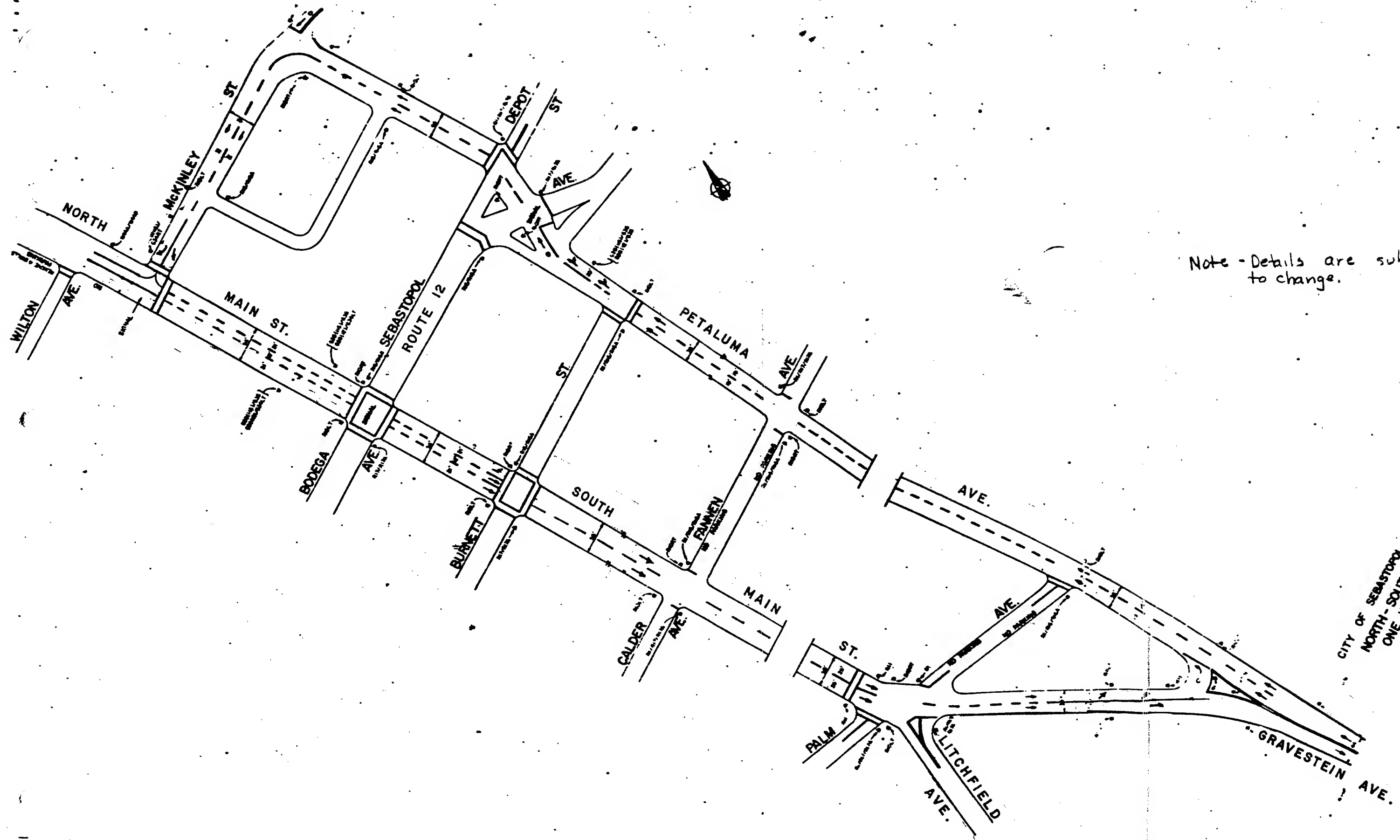
11-30-79 12:06
CALTRANS ASC 138040
04:50 04:50N 16 13-51
04:21



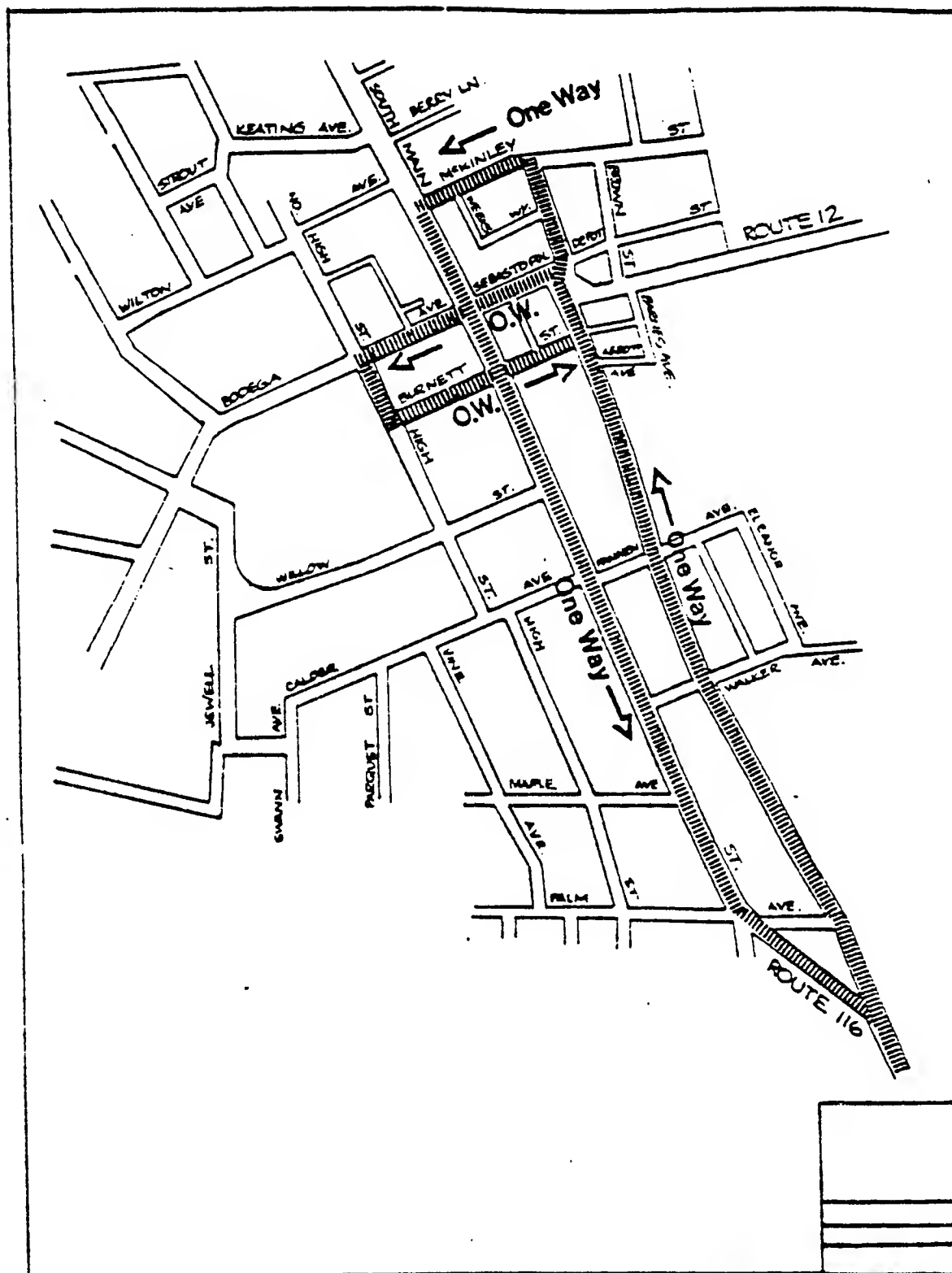
Note - Details are subject to change.

CITY OF SEBASTOPOL
NORTH-SOUTH
ONE WAY
FIGURE

Conceptual Plan
North-South One-Way Couplet



Conceptual Plan
North-South One-Way Couplet



Sonoma 116 / Sebastopol Couplet

NOTICE OF HEARING - TRAFFIC SYSTEM

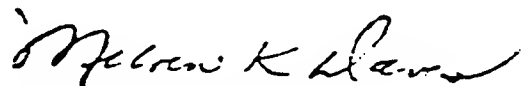
Notice is hereby given that the City Council of the City of Sebastopol will hold a public hearing on:

Monday, September 18, 1978
7:00 p.m.
Sebastopol Veterans' Building
282 High Street, Sebastopol, California

on a "Traffic System Study" recommending a system of 1-way streets, along Petaluma Avenue, McKinley Street and North & South Main Street; Bodega Avenue, Sebastopol Avenue, and Burnett Street; and additional traffic signals. Information on the proposed system is contained in a "Traffic System Study, 1978" prepared by TJEM, Transportation Consultants.

Copies of the Study may be purchased at City Hall (Finance Office) 7120 Bodega Avenue, for \$5.00. Copies of the Study are also on file for public review at the Sebastopol Public Library and Sebastopol Chamber of Commerce.

Anyone interested in the proposed traffic system may attend the City Council hearing and be heard.



Melvin K. Davis
City Clerk

RESOLUTION NO. 3042

RESOLUTION OF SEBASTOPOL CITY COUNCIL
REQUESTING CALIFORNIA DEPARTMENT OF TRANSPORTATION
IMPLEMENT ONE-WAY TRAFFIC SYSTEM

WHEREAS, City Council has had prepared, through assistance of State Office of Traffic Safety, a Study entitled: "Traffic System Study, 1978", and said study recommends a one-way (North-South) traffic system for State Highway 116 and a one-way (East-West) traffic system for State Highway 12; and

WHEREAS, City Council has held a public hearing thereon; and

WHEREAS, City Council believes the one-way system is an economical, interim solution for Sebastopol traffic problems, is energy and air quality efficient, reduces vehicle delays, reduces vehicle accident rate, makes feasible better intermodal coordination, improves pedestrian safety, environmentally sound, requires no new major construction, and no significant taking of private property, and makes best use of already existing streets, and is therefore sound Transportation Systems Management;

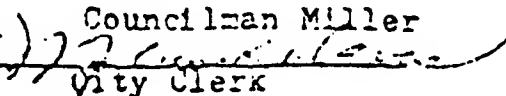
NOW, THEREFORE, BE IT RESOLVED, Sebastopol City Council hereby requests State Department of Transportation to implement said one-way street system, at the very earliest date, and to move ahead on the project report as rapidly as possible.

BE IT FURTHER RESOLVED, Sebastopol City Council offers its maximum cooperation, staff and facilities in implementing this Traffic System Management at the earliest feasible date. The earliest possible action maximizes the Transportation Systems Management advantages.

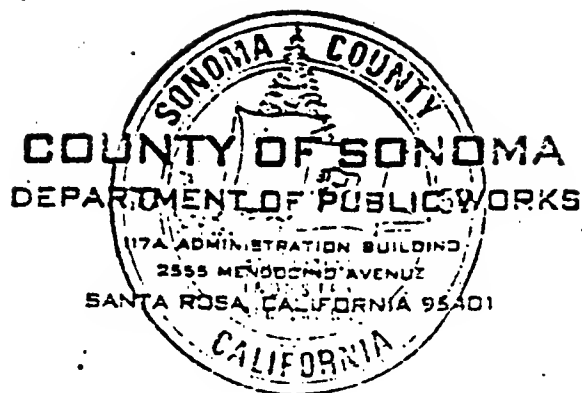
IN COUNCIL DULY PASSED this 2nd day of October, 1978.

APPROVED: 

MAYOR

AYES:	<u>4</u>	Councilmen G. Anderson, B. Anderson, Klinker & Mayor Lu
NOES:	<u>0</u>	None
ABSENT:	<u>0</u>	None
ABSTAIN:	<u>1</u>	Councilman Miller
ATTEST:	<u> </u>	 City Clerk

DONALD B. HEAD
DIRECTOR OF PUBLIC WORKS



TELEPHONE
AREA CODE 707
ROAD 527-2231
SANITATION 527-2351
REFUSE 527-2974
TRANSPORTATION 527-2231

March 7, 1979

RE: Priority Items for
Discretionary Funds
St. Trans. Improvement Plan

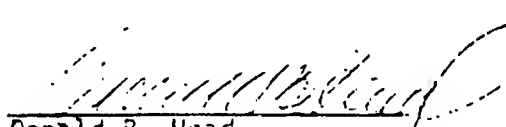
Sec. one way complete

T. R. Lammers
Cal Trans
P. O. Box 3366, Rincon Annex
San Francisco, CA 94119

Attn: Russ Sayre

The Board of Supervisors adopted Resolution #63183 on February 27, 1979 which recommended two priority items as requested by M.T.C.. All other projects were submitted for inclusion in the five-year State Transportation Improvement Plan.

The M.T.C. will be discussing all priority projects at a public hearing Friday, March 16, 1979, 9:00 a.m. to noon at the Port Headquarters, 800 Madison Street, Oakland, California.


Donald B. Head
Director of Public Works

DBH/HEW:kd

Attachment

ATTEST: MAR 6 1979

EEVE T. LEWIS, County Clerk &
ex-officio Clerk of the Board of Supervisors
of the State of California, in & for the County
of Sonoma, By [Signature] Deputy

RESOLUTION NO. 63183

County of Sonoma
Santa Rosa, CA. 95401

February 27, 1979

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SONOMA RECOMMENDING
MAJOR NON-INTERSTATE PROJECTS IN SONOMA COUNTY FOR INCLUSION IN THE
PRELIMINARY STATE TRANSPORTATION IMPROVEMENT PROGRAM.

WHEREAS, the State Legislature adopted AB 402 which requires the adoption
by Metropolitan Transportation Commission of a regional transportation program
by April, and

WHEREAS, the staff of MTC has recommended that the project selected for
inclusion into the TIP for discretionary funds be approved by the County Board
of Supervisors and the project supported (politically and financially) by the
community, and

WHEREAS, the MTC held two meetings (January 25 and February 15) with staff
representatives of the cities and county,

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors be and hereby
approves the following projects and submits said projects for inclusion in the
MTC Regional Transportation Improvement Program (TIP), and the California
Transportation Commission (CTC) State Transportation Improvement Program (STIP):

Priority One

Route 101 - Cloverdale Bypass, P.M. 49.8/54.2 - estimated construction
cost \$20,000,000.


Priority Two

Route 116/121 - Route 101 to East County Line:

- (a) Adopt Frates Road and Adobe Road into State Highway
System as an alternate to Route 116.
- (b) Route 116 - Widening and improvement in Petaluma from
Route 101 to Frates Road. Estimated construction
cost \$500,000.
- (c) Improve intersection of State Highway 116 and Adobe
Road - \$300,000.
- (d) Improve, by stage construction, Route 116 between
Adobe Road and State Highway 121, first stage \$750,000.
- (e) Improve, by stage construction, Route 121 between
Route 116 and Napa Road, first stage \$750,000.

Other Projects Submitted by Cities & Recommended by this Board of Supervisors
for Inclusion in 5 Year STIP

Route 12 - South E Street to Brookwood Avenue, P.M. 16.4/17.5
Estimated construction cost \$6,000,000.

Route 116 - City of Sebastopol, one-way couplet. Estimated
construction cost \$500,000. 

Route 101 - Completion of Rohnert Park Expressway,
P.M. 13.4/14.4. Interchange estimated construction cost
\$2,000,000.

Route 101 - Improvement of the access ramps at Wilfred Avenue
Interchange. Estimated construction cost \$2,000,000.

Route 12 - Safety Improvements - intersection signalization,
guard rail, miscellaneous projects from City of Santa Rosa to
Route 121. Estimated cost not to exceed \$200,000/project.

Route 101 - Construction Rainer Interchange located between
Corona Road and East Washington Street in City of Petaluma.
Estimated construction cost \$5,000,000.

BE IT FURTHER APPROVED that the City of Santa Rosa by Resolution
No. 13692 approved financial participation for design and construction of the
Route 12 freeway from South E Street to Brookwood Avenue, and the City of
Petaluma has adopted development mitigation fees for the design and construction
cost to improve Route 116 from Highway 101 to Frates Road,

BE IT FURTHER RESOLVED that the Board of Supervisors recommends a cooperative
project between the City of Sebastopol, County of Sonoma and the State Department
of Transportation for the design and construction of the Route 116 one-way couplet.

Supervisors:

Kahn	Aye	Putnam	Aye	Esposti	Aye	Koenigshofer	Aye	Rudee	No
Ayes	4	Noes	1	Abstain	0	Absent	0		

SO ORDERED.



City of Sebastopol

CITY HALL
7120 BODEGA AVENUE
SEBASTOPOL, CALIFORNIA 95472
(707) 823-7863

December 20, 1979

EXHIBIT 5
GWEN A. ANDERSON, MAYOR

COUNCILMEN

ROBERT E. ANDERSON
THOMAS R. KLINGER, JR.
HERBERT E. LUKAS
THOMAS F. MILLER

CITY MANAGER

MELVIN K. DAVIS

Metropolitan Transportation Commission
Hotel Claremont
Berkeley, Ca. 94705

5-Year RTIP
One-Way Couplets in
Sebastopol
04-Son-12,116

Gentlemen:

City of Sebastopol urgently requests that the Metropolitan Transportation Commission include the proposed One-Way Couplet System (Highways 12 & 116, within City of Sebastopol), within the 5-year RTIP and give it a highest priority in your recommendations to California Transportation Commission.

The Sebastopol City Council has unanimously committed \$100,000 of city funds toward the 1-way street system. Estimated cost by CalTrans is \$500,000.

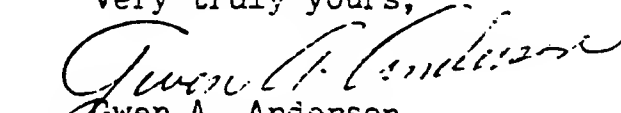
We feel this is a sensible, logical use of existing streets and traffic corridors for transit funding. It involves no new street construction. The main expense is for traffic lights, marking, and rerouting of traffic.

With 40,000 cars per day now funneling through the town's main intersection of Highways 12 and 116 within Sebastopol, long delays and traffic accidents are mounting. This single intersection is the main traffic funnel for all of Western Sonoma County, serving a 200 square mile agricultural area and 30,000 residents. All suffer from this aggravated problem. Heavy truck traffic associated with the surrounding agricultural area and industry are delayed, forced up over curbs, endanger pedestrians, and further aggravate the traffic congestion.

The requested priority rating and funding makes use of existing transportation resources. It is an excellent example of Transportation Systems Management, and is energy and air quality efficient.

We urge your approval.

Very truly yours,


Gwen A. Anderson
Mayor

GAA:rf

cc: Dist. 4, CalTrans ✓
County Engineer

Sonoma 116/ Sebastopol Couplet

DESCRIPTION:

One-way couplet system for Routes 116 and 12 at their intersection in the City of Sebastopol.

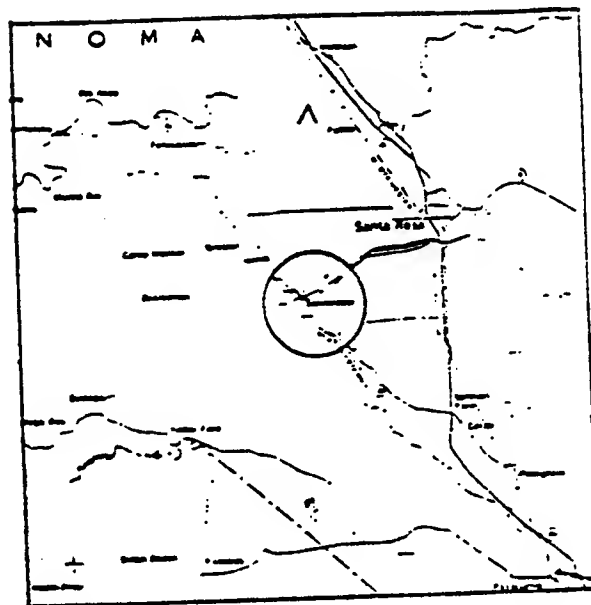
ESTIMATED COST:

5.1 million*-local contribution
 .4 million - other funds
5.5 million - Project cost

*Only local funds are being programmed at this time.

SYSTEM:

Federal Aid Primary



JUSTIFICATION:

- o Involves use of existing streets; major cost is for 3 sets of traffic signals; no new basic construction is required.
- o Project is cost effective, compared to cost of a bypass around Sebastopol. All such alternates require new routes, new construction, new right-of-way, and displacement and relocation of existing residences and businesses. All alternatives are 4 to 8 times more costly.
- o Reduces traffic and pedestrian hazards at single main intersection of Highways 12 and 116, which handles up to 40,000 vehicles per day. Traffic now backs up 3 blocks and more waiting to get through this single intersection.
- o This single intersection is the main traffic funnel for all of Western Sonoma County. Heavy truck traffic associated with the surrounding agricultural area and industry is delayed, forced up over curbs, endangers pedestrians, and further aggravates the traffic congestion.
- o One-way couplet system has strong local support of City Council (\$100,000 pledge toward project cost) and all community organizations.

NOTE: This project was authorized for inclusion of local funds only in the RTIP by the MTC on March 26, 1980.

RECORD OF MEETING

Memorandum		FILE: 04-Son-116, 12 REF: 04225 - 208651
TO: R. D. Savre		FROM: R. W. Crockett
WHERE HELD		
<input type="checkbox"/> BY TELEPHONE	<input checked="" type="checkbox"/> DISTRICT OFFICE	<input type="checkbox"/> AT OTHER PARTY'S OFFICE <input type="checkbox"/> OTHER
INITIATED BY		DATE OF CONVERSATION
<input checked="" type="checkbox"/> DISTRICT	<input type="checkbox"/> OTHER PARTY	9-24-80
PARTICIPANTS		
NAMES		TITLES & AFFILIATIONS
Mel Davis	City Manager - City of Sebastopol	
Bob Greer	California Highway Patrol	
Ralph Harrison	Highway Operations Branch	
Carl Polo	Traffic Branch	
Bob Haycock	Maintenance Branch	
Marie Pang	Environmental Planning Branch	
Sam Yim	Project Development C Branch	
Bob Crockett	Team Leader	

SUBJECT Wither goest ye project?

At the last team meeting on November 27, 1979, the team agreed that several items were to be accomplished before the next team meeting. A brief summary of these items were covered:

1. "Establish financing by having the project listed in the RTIP (Regional Transportation Improvement Program) with a high priority."

The City of Sebastopol made every effort to have this project included in the 1980 STIP. Sonoma County identified this project as the No. 2 priority -- just after the No. 1 priority, the Cloverdale Bypass project. MTC did not include the project in the RTIP, primarily because of timing problems, but did strongly recommend inclusion in the STIP in their letter of transmittal to the CTC.

The District also recommended inclusion of this project to Headquarters but again timing problems negated this request.

The CTC did not include this project in the 1980 STIP. MTC appealed, but the CTC rejected the appeal. Therefore, this project, as presented, is not funded.

However, as discussed below, a smaller project is feasible and may be financially feasible.

2. "Review traffic count and highway operations report. The City representative expects that if the traffic is counted during the school year, the results will be larger and materially change the report."

The Highway Operations Branch obtained traffic data and made a new capacity analysis. The school year traffic data was not significantly different from the earlier data. A copy of their report will be available shortly and will be furnished to all team members.

During the discussion it was noted that the earlier concern regarding only a north/south couplet has been re-evaluated. It is now felt that a north/south couplet only would relieve some of the congestion problems and could be implemented without the east/west couplet, if necessary.

3. "Continue preliminary environmental assessment because even if the scope of the project is changed, it may be necessary to study the same environmental factors. NOTE: This project is listed in the District's Activity Plan and work is authorized even though it is not in the STIP."

Because of the Environmental Planning Branch's work load on projects where funding was assured, the environmental assessment work was suspended. However, the basic noise impact study was essentially completed. Attached are excerpts from the draft noise impact report covering the noise studies up to the time of the work suspension.

4. "Estimate the construction cost and the sharing of cost between the City and the State for the ... alternatives ..."

March 1980 very preliminary estimates are:

	<u>City</u>	<u>State</u>	<u>Total</u>
Full project			
Route 116	\$100,000	\$750,000	\$850,000
Route 12	*	130,000	130,000
Total	\$100,000	\$880,000	\$980,000
No resurfacing - signals and striping only			
Route 116	\$170,000	\$170,000	\$340,000
Route 12	20,000	20,000	40,000
Total	\$190,000	\$190,000	\$380,000
District recommendations for STIP			
Route 116	\$100,000	\$410,000	\$510,000
Route 12	*	90,000	90,000
Total	\$100,000	\$500,000	\$600,000
Signal at Route 12/Petaluma Avenue and Modifying McKinley			
	\$63,000	\$67,000	\$130,000

*Signals included in Route 116 costs.

For the remainder of the meeting, various schemes that might reduce congestion primarily at the Routes 116/12 (Main Street/Sebastopol Avenue) intersection were discussed.

- (a) Timing could be changed at the Routes 116/12 intersection to provide more green time for a.m. eastbound traffic on Bodega Avenue. This leg of the intersection backs up in the morning more severely than other legs.
- (b) Provide separate left-turn phases at the Main Street and Sebastopol Avenue intersection.
- (c) Prohibit left-turns from southbound Main Street to westbound Sebastopol Avenue. The left-turn storage lane now backs up and blocks the through lane. During the peak period cars wait 2 or 3 and, occasionally, 4 cycles. This restriction by itself may cause other problems. For example, there is no left-turn storage at Burnett and prohibiting left-turns to Sebastopol may create a problem at Burnett.
- (d) Divert left-turning traffic at McKinley. This "solution" appeared to be the most acceptable course of action, but will require further study. The project that would implement this proposal includes a new signal at the Sebastopol/Petaluma intersection, replacing the existing Type 90 controller at McKinley with a Type 170, providing adequate left-turn storage along Main Street, and necessary signing to divert southbound/eastbound and westbound/northbound traffic away from the Main Street/Sebastopol Avenue intersection.

This project would be compatible with a future one-way couplet.

The City may consider funding this project themselves in order to advance implementation from the three years or longer that State participation may involve.

- (e) Implement the one-way couplets without installing signals in order to avoid funding problems. It was agreed that the one-way couplets would not work without signals.
- (f) Institute one-way couplet system without bringing City streets into the State highway system. Because of funding difficulties, it is now clear that implementation of the one-way couplet system can be made only if the City retains their streets. The increased traffic usage will probably increase the City's maintenance costs.

NEXT ACTIONS

1. Finalize noise impact report.
2. Finalize highway operations report.
3. Investigate "solution d" to determine operational requirements for turning movements, signing and cost.

RW Crockett
R. W. CROCKETT
Senior Engineer
Project Development
C Branch

Attachment

RWC:dfc

cc: VJR, LN, EAH, RNK-LC, Team Members, PER

Memorandum

Project Development C Branch

Attention: R. W. Crockett

Date: September 22, 1980

File: 04-Son-12, 116
One-way Couplets
in Sebastopol
04225-2 8651From : DEPARTMENT OF TRANSPORTATION
04 Highway Operations Branch

Subject:

As agreed at the November 27, 1979 team meeting on the Sebastopol one-way couplets project, we have made a capacity analysis and obtained traffic speed data for school year traffic conditions. The capacity analysis, speed data, and also a description of observed existing traffic conditions are in the attached report. This supplements our October 30, 1979 report, which was based on summer time traffic conditions.

In summary, we found that the April, 1980 school year peak hour volumes and congestion were not significantly different from the July, 1979 summer conditions. The Main Street/Sebastopol Avenue/Bodega Avenue intersection had moderate congestion with both the school year and summer traffic. The proposed couplets would greatly increase this intersection's capacity for future traffic growth.

E. F. GRAHAM
Senior Engineer
Highway Operations Branch

Attach

RCH:ey
cc: LN/EFG/RCH, HM, PHall(HQ), IFukutome(HQ), Hwy Ops File.

TRAFFIC OPERATIONS REPORT
SCHOOL YEAR CAPACITY ANALYSIS AND SPEED DATA
PROPOSED SEBASTOPOL ONE-WAY COUPLETS

I. INTRODUCTION

In June, 1979 Highway Operations was requested to provide a capacity analysis for the existing street system and proposed one-way couplets in the City of Sebastopol. The one-way couplets (see Figure 1) were requested by the City to relieve existing traffic congestion, especially at the Main Street/Sebastopol Avenue/Bodega Avenue (Route 12/Route 116) intersection.

Our analysis was described in our October 30, 1979 Highway Operations Report. Based on Traffic Branch peak hour intersection counts, we found that the north-south and west couplets would increase the street system capacity significantly, chiefly by removing most of the conflicting movements from the Main Street/Sebastopol Avenue/Bodega Avenue intersection. However, we also found that the existing congestion at this intersection was not very serious. Our capacity analysis and July 19, 1979 field observation showed Level of Service C (no significant congestion) during the AM peak period, and Level of Service C-D (moderate congestion) for the midday and PM peak periods.

At a November 27, 1979 meeting, City representatives did not agree with our finding of no severe congestion at the Main Street/Sebastopol Avenue/Bodega Avenue intersection. They stated that our July counts and analysis were not typical, since they did not include the impact of school traffic. It was therefore agreed that the Highway Operations and Traffic Branches would do another analysis and traffic count during the school year.

The new traffic counts and field observations were made in mid-April, 1980. This report describes existing traffic operation based on this data, concentrating on the Main Street/Sebastopol Avenue/Bodega Avenue intersection. Also, July 1979 and April, 1980 capacity analyses and speed data are compared. Finally, some possible interim improvements to the Main Street/Sebastopol Avenue/Bodega Avenue intersection are discussed.

II. TRAFFIC VOLUME COMPARISON

Overall, the April 1980 peak hour volumes for the street system were not significantly different from the July, 1979 volumes. Figures 2A and B show the 1979 and 1980 AM, midday and PM peak hour volumes at the key intersection in Street/Sebastopol Avenue/Bodega Avenue intersection, which has the most traffic congestion. Only the movements listed in Table I below increased by a significant amount (20 percent or more) in the 1980 count. Only movements A, B and L significantly affected the intersection operations.

TABLE I

MAIN ST/SEBASTOPOL AVE/BODEGA AVE INTERSECTION

April 1980 Traffic 20% (or more) higher than July 1979.

Peak Period	Movement	July 10, 1979	April 8, 1980
AM	A. Eastbound Bodega Ave through	352	428
	B. Eastbound Bodega Ave left turn	32	68
	C. Eastbound Bodega Ave right turn	66	85
	D. Westbound Sebastopol Ave through	117	143
	E. Northbound Main St. through	226	285
	F. Southbound Main St. through	249	315
MIDDAY	G. Westbound Sebastopol Ave right turn	150	192
	H. Southbound Main St. right turn	56	76
PM	I. Eastbound Bodega Ave through	215	248
	J. Eastbound Bodega Ave right turn	78	98
	K. Westbound Sebastopol Ave left turn	123	148
	L. Northbound Main St. through	415	510
	M. Northbound Main St. left turn	88	106

The July, 1979 and April, 1980 peak hour volumes at four other intersections are shown on Figures 3A and B through 6A and B.

III. APRIL, 1980 TRAFFIC OPERATION

On Thursday, April 10, 1980, we observed existing AM, midday and PM traffic conditions at the Main Street/Sebastopol Avenue/Bodega Avenue intersection. This intersection, where the only significant congestion occurred, has only a two-phase signal. Without separate off turn phases, continual conflicts occur between opposing through and left turn movements.

A. AM Peak Period

During the AM peak period, traffic on the eastbound Bodega Avenue approach to the intersection started queuing at 07:20. This traffic was probably commuters bound for the Santa Rosa Area. By 07:30 the queue was longer than the 10+ vehicles that could clear on the green phase. Typically, about five vehicles at the end of the queue had to wait for the second green phase. Then at 07:50 the queue suddenly grew to 27 vehicles, extending

Beyond High Street. Some of these vehicles took three signal cycles to clear the intersection. However, this condition lasted for only about ten minutes, and then the queue disappeared.

The southbound Main Street left turn was the only other movement with long backups. This queue extended beyond the storage lane briefly between 07:40 and 07:50, and then cleared out.

The other intersection movements had no significant backups. On the northbound Main Street approach at around 07:30 about one-third to one-half of the volume was students' vehicles. However, the student traffic had no significant adverse impact.

B. Midday Peak Period

Moderate midday congestion occurred from about 11:50 to 12:45. The only problem was the southbound Main Street left turn queue, which occasionally extended to McKinley Street. From 12:00 to 12:45 some of these vehicles had to wait for a second green phase to clear the intersection, depending on the opposing northbound through volume. The northbound movement restricted the left turn most severely from 12:15 to 12:18, when only 2 or 3 vehicles could make the left turn on each cycle.

C. PM Peak Period

The PM peak period started early at 14:05 when student traffic began arriving on the southbound Main Street approach. By 14:08 the southbound queue extended from Sebastopol Avenue/Bodega Avenue back to Healdsburg Avenue. However, the queue was gone by 14:25. The southbound Main Street queue to Healdsburg Avenue developed again at 15:10, but lasted only until 15:15. Travel time for a sample vehicle in the queue from Healdsburg Avenue to Sebastopol Avenue/Bodega Avenue was 2 minutes 38 seconds, which equals about 1 minute 50 seconds delay.

Periodically during this early PM peak period the southbound Main Street left turn was blocked by the northbound through movement so that only about three vehicles could clear on one cycle. The queue was as long as seven vehicles, and therefore some had to wait until the third cycle to clear the intersection.

From 15:15 to 17:05 the intersection had no serious problems. Short term queues appeared on all approaches at various times.

At about 17:05, traffic increased on Main Street. The southbound queue periodically extended to McKinley Street, and from 17:15 to 17:20 reached Healdsburg Avenue. The northbound movement grew heavy enough to block the southbound left turns, so that they usually could move only at the end of the green light, or into the yellow light time. Between 17:09 and 17:23 we counted the southbound left turns on every cycle. The average for 14 cycles was 2 vehicles turning out of a 7-vehicle queue. This meant the average vehicle had to wait two or three cycles, a delay of two or three minutes. One vehicle was observed waiting for four cycles.

The period of worst congestion, when long queues developed on nearly all approaches, was from 17:05 to 17:25. By 17:35 the queues had all disappeared.

IV. CAPACITY ANALYSIS

Table II below compares the intersection lane vehicles (ILV) for the July, 1979 and April, 1980 peak hour counts. For most intersections there is no significant difference. For both conditions the proposed couplets would greatly reduce the Main Street/Sebastopol Avenue/Bodega Avenue ILV's, leaving unused capacity for increased peak hour volumes in the future.

TABLE II

PEAK HOUR ILV* FOR JULY 1979 AND APRIL, 1980 TRAFFIC
SEBASTOPOL O.E-WAY COUPLETS

Intersection	Alternate					
	No Build		North-South One-way Couplet		North-South East-West One-way Couplets	
	AM	PM	AM	PM	AM	PM
Main St/Mckinley St.	750** (710)	880 (980)	630 (650)	730 (720)	630 (650)	730 (720)
Main St/Sebastopol Ave/ Bodega Ave.	960 (890)	1080 (1140)	800 (700)	880 (830)	520 (400)	620 (600)
Main St/Burnett St.	620 (620)	740 (790)	310 (420)	360 (500)	540 (560)	540 (610)
Petaluma Ave/Burnett	360 (330)	410 (420)	460 (480)	450 (540)	740 (660)	700 (750)
Petaluma Ave/Sebastopol Ave	630 (540)	970 (800)	800 (670)	970 (1040)	620 (560)	720 (840)

730
(645)

820
(720)

* Revised lane distribution - Feb 82

Notes:

*Intersection Lane Vehicles - the sum of the heaviest conflicting interchange movements, on a vehicles per lane basis.

<u>ILV</u>	<u>Description of Traffic Operations</u>	<u>Level of Service</u>
0-1000	No significant delay	A-B
1000-1200	Minor delays - most vehicles clear on each signal cycle	C
1200-1500	Congested - many vehicles wait more than one signal cycle	D-E
1500+	Heavy congestion - long delays, duration of congestion more than one hour.	F

** 00 = July, 1979 ILV
(00) = April, 1980 ILV.

We have also made one major change in the July, 1979 ILV's. In our October, 1979 report the Main Street/Sebastopol Avenue/Bodega Avenue intersection had a PM ILV of 1070 for the north-south couplet alternate. We have since found that this ILV could be reduced to 880 with a different signal phasing. With this revision, the north-south couplet overall benefit is much closer to the north-south/east-west couplets benefit.

V. ROUTE SPEEDS

The peak hour and off-peak traffic speeds are compared in Table III. These speeds are based on tachograph runs. The April, 1980, speeds are all higher than the July 1979 speeds, and significantly higher on Sebastopol Avenue/Bodega Avenue and north-bound Main Street.

TABLE III
JULY, 1979 AND APRIL 1980 TRAFFIC SPEEDS

<u>Street</u>	<u>Direction</u>	<u>Average Speed, MPH</u>					
		<u>PM Peak Hour</u>			<u>Off Peak</u>		
		<u>No Build</u>	<u>N-S</u>	<u>N-S/E-W</u>	<u>No Build</u>	<u>N-S</u>	<u>N-S/E-W</u>
Main Street	Northbound	11* (19)	- -	- -	19 (23)	- -	- -
Main Street	Southbound	18 (20)	18 (20)	20 (24)	20 (24)	20 (24)	20 (24)
Petaluma Blvd	Northbound	19 (22)	19 (22)	17 (22)	17 (22)	17 (22)	17 (22)
Petaluma Blvd	Southbound	17 (21)	- -	- -	21 (22)	- -	- -
Sebastopol/ Bodega Ave.	Eastbound	12 (20)	12 (20)	-	14 (17)	14 (17)	-
Sebastopol/Bodega Ave.	Westbound	9 (13)	9 (13)	11 (19)	11 (19)	11 (19)	11 (19)

Notes:

- * 00 = July, 1979 Speed
- (00) = April, 1980 Speed

VI. CONCLUSION

Traffic counts, field observation, capacity analyses and speed data show that the mid-April, 1980 school year traffic operation was not significantly worse than the July, 1979 summer time conditions in Sebastopol. Traffic speeds were actually higher in April, 1980.

As in July, 1979, the only intersection with significant congestion was Main Street/Sebastopol Avenue/Bodega Avenue. The biggest problem at this intersection was the conflict between the southbound left turn and northbound through movements on Main Street.

VII. POSSIBLE INTERIM IMPROVEMENTS

The following improvements could be considered to reduce some backups at the Main Street/Sebastopol Avenue/Bodega Avenue intersection in the interim before one-way couplets are installed.

- A. More green time for the eastbound Bodega Avenue approach during the AM peak period. This additional green time would be limited by its adverse impact on Main Street traffic, especially the southbound Main Street left turn.
- B. More green time for the southbound Main Street approach during the midday and PM peak periods, as limited by the adverse impact on Sebastopol Avenue/Bodega Avenue traffic.
- C. Separate left turn phase for Main Street. The conflicting southbound left and northbound through movements' peak hour volumes (see Figures 1) appear to be high enough to consider a left turn phase. The existing PM peak period delays to the southbound left turn vehicles probably would be reduced significantly.

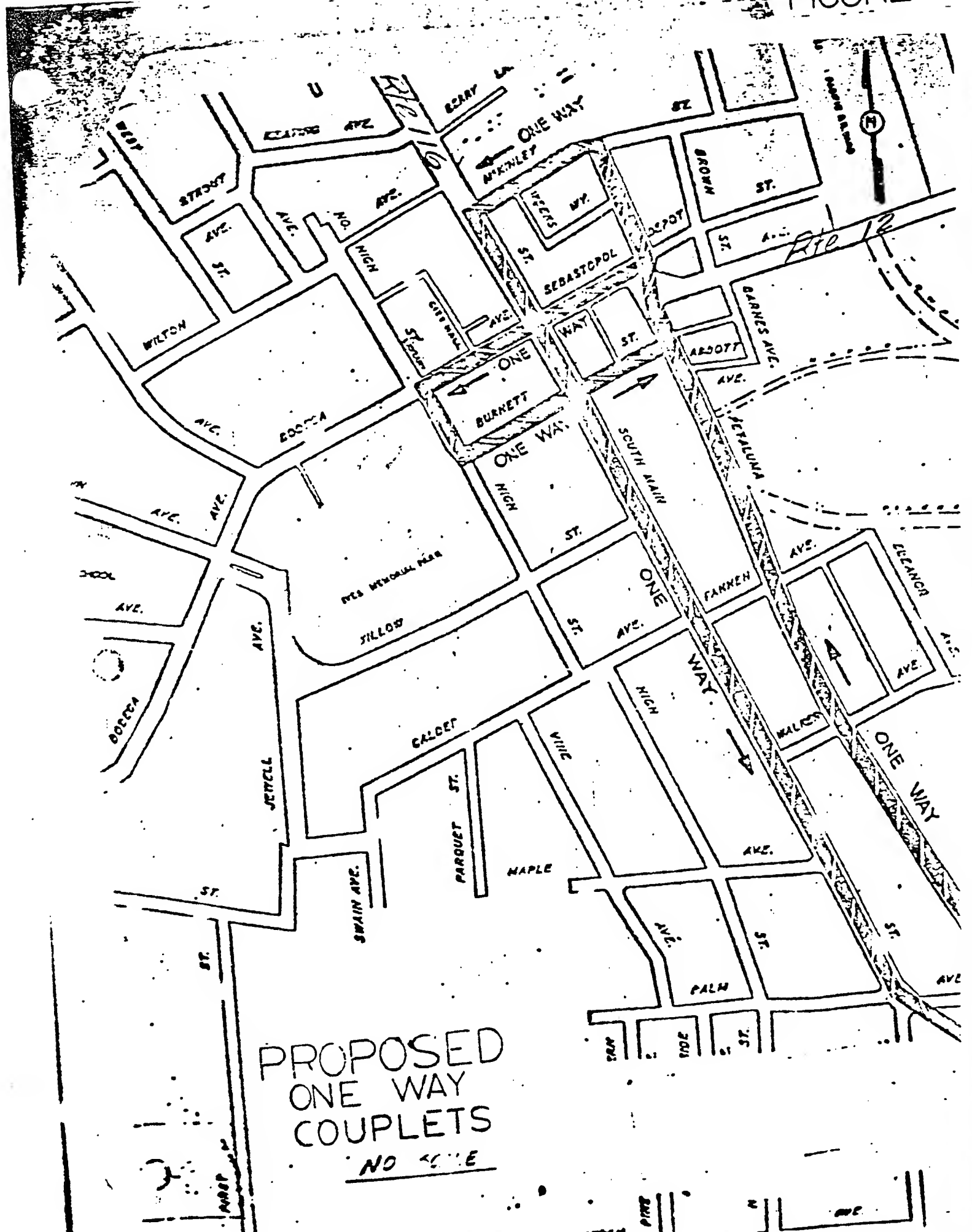
2A&B

R. C. HARRISON
Highway Operations Branch

Date:

RCH:ey

FIGURE 1



TUESDAY JULY 10, 1980
TUESDAY APRIL 8, 1980

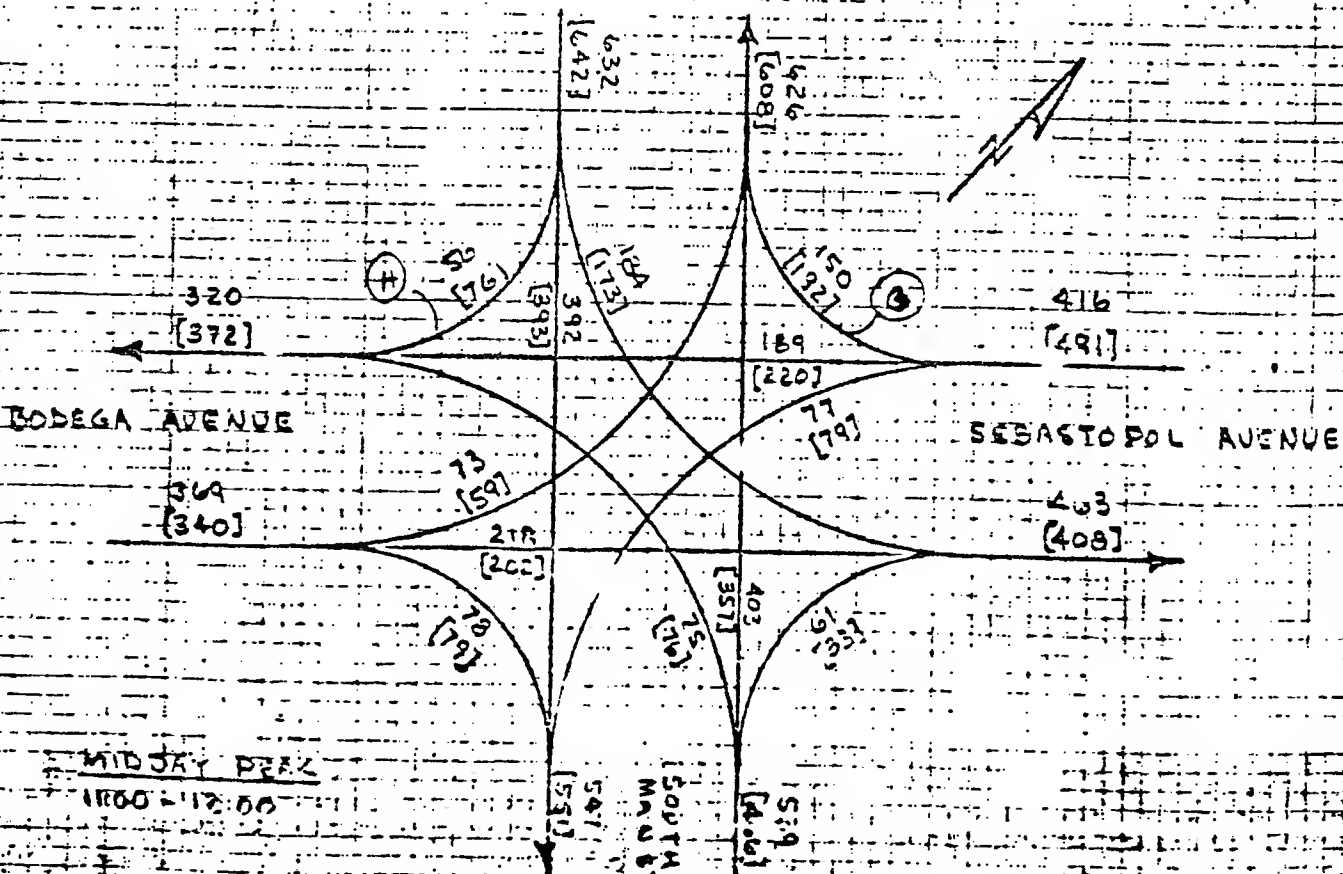
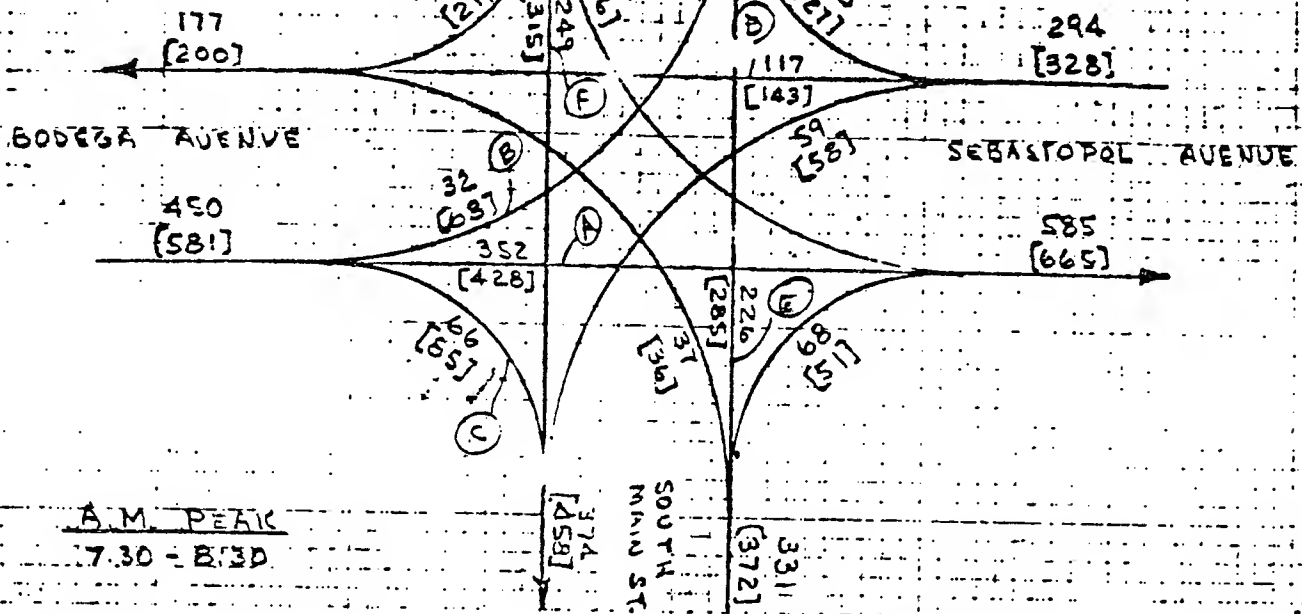


FIGURE 2A

ODC TUESD JULY 18, 1979
 [000] TUESDAY APRIL 2, 1980

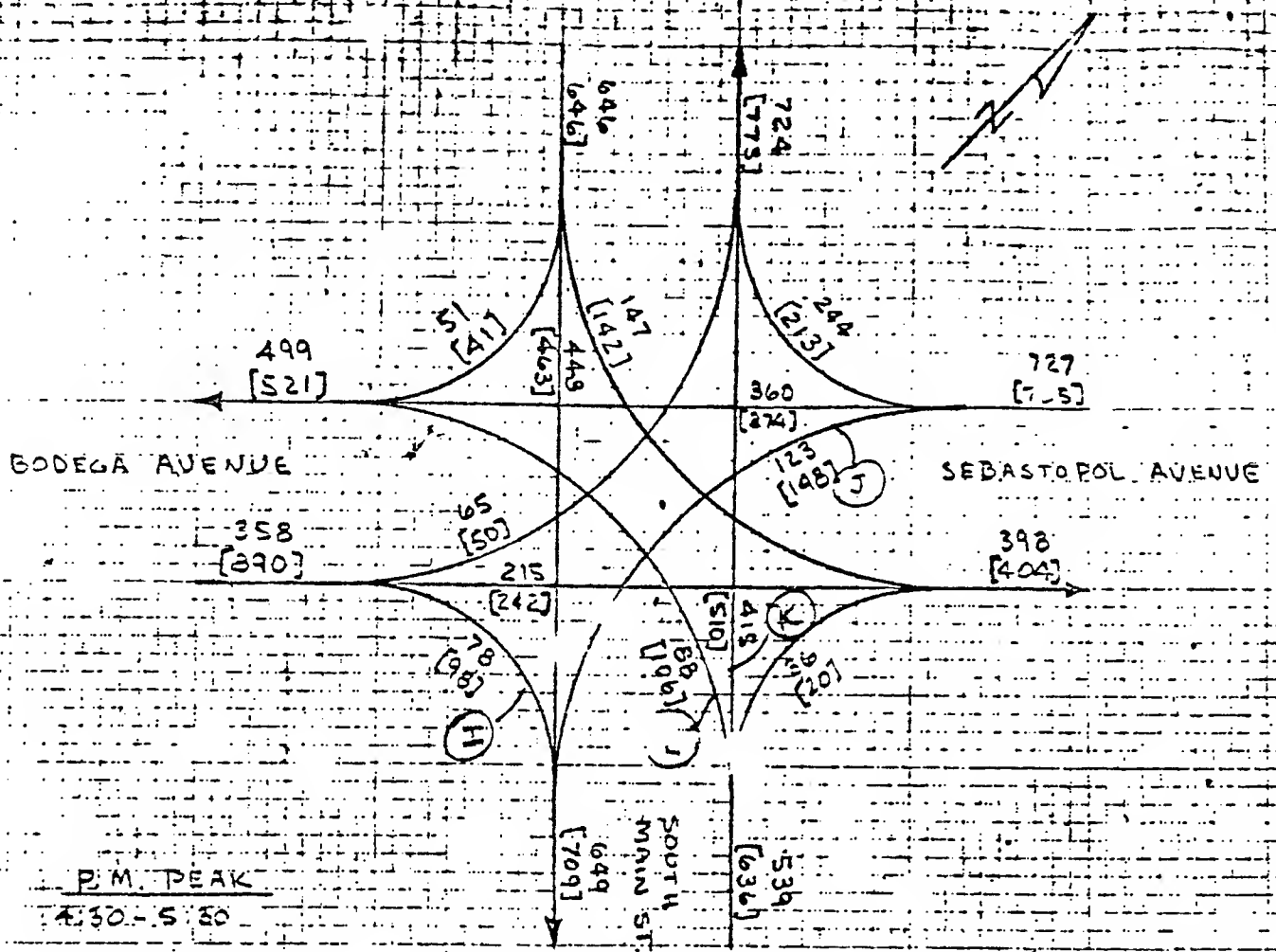


FIGURE 2B

GOOD THURSDAY JULY 10, 1919

[500] TU 549, R 5, 1580

A.M. PEAK
73. 830

MIDDAY PEAK

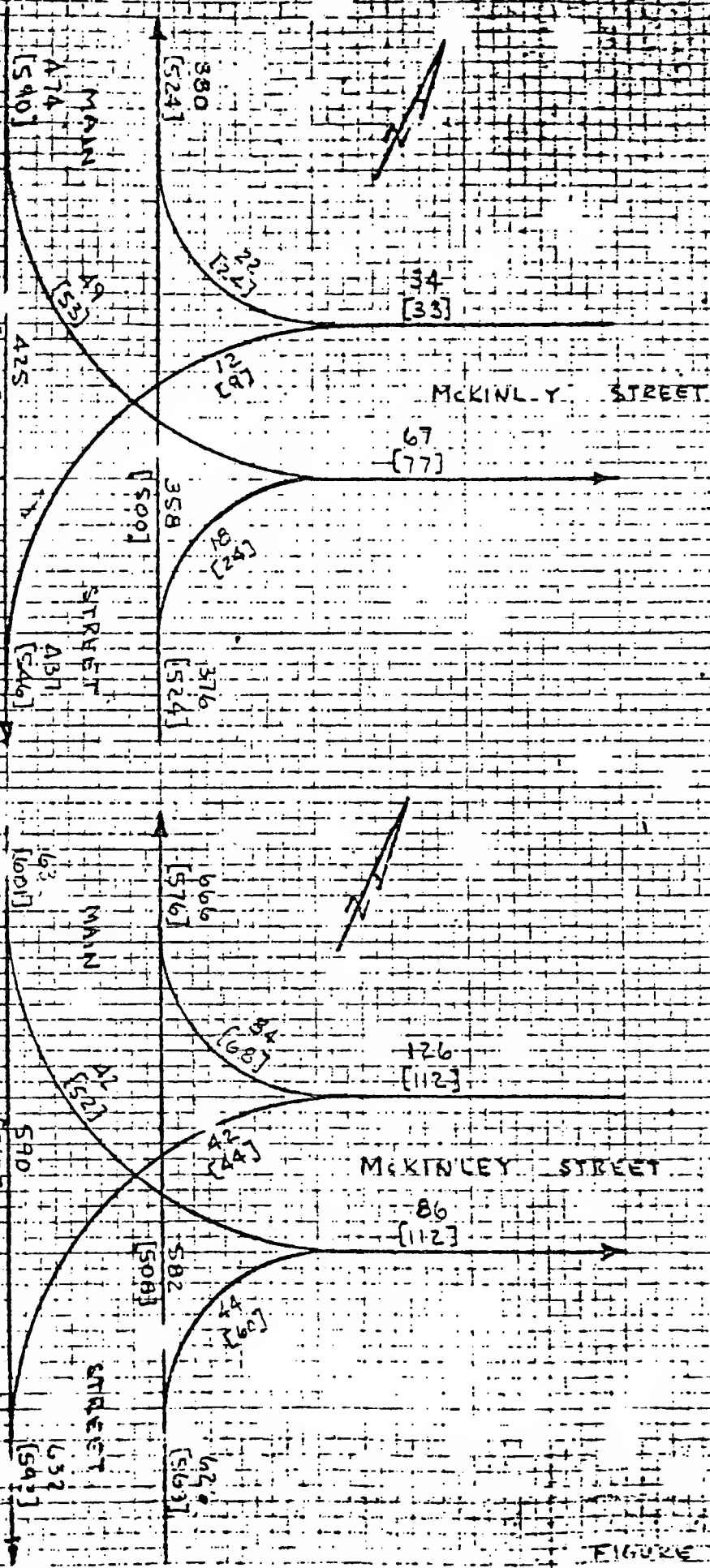
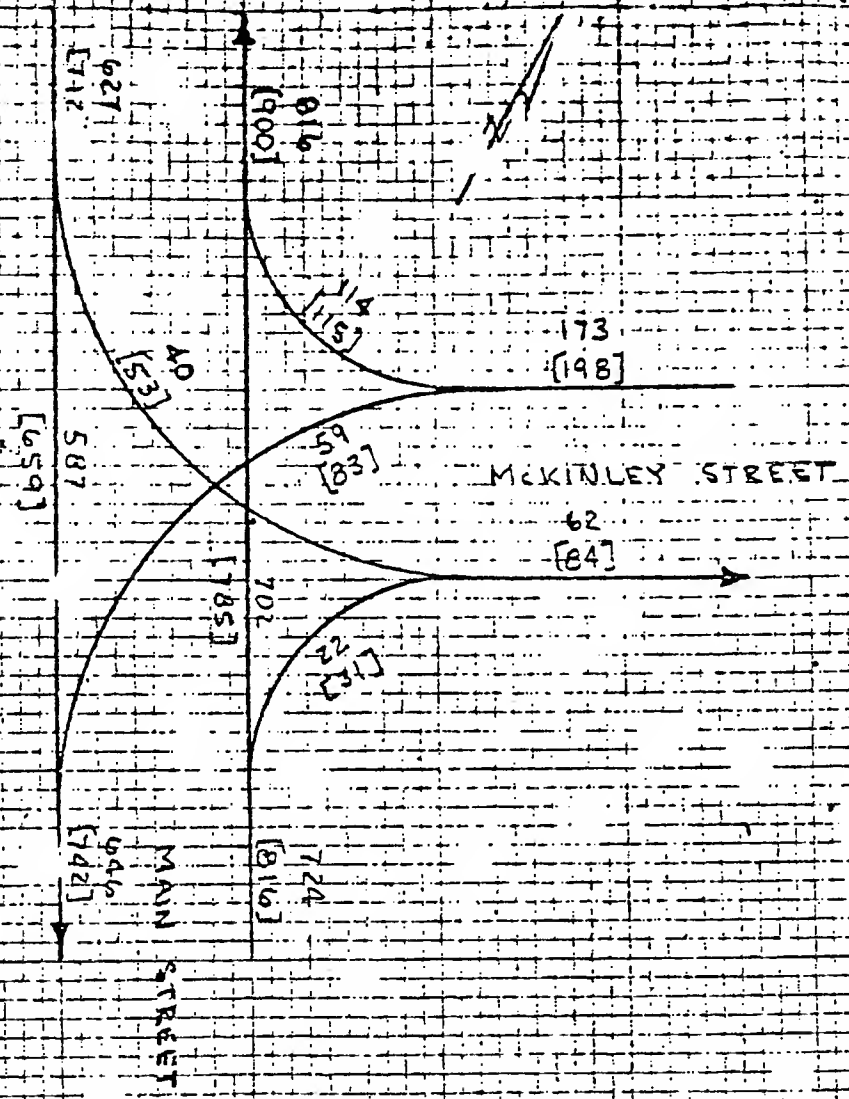


FIGURE 3A

0000 THURSDAY JULY 12, 1979
 0000 TUESDAY APRIL 8, 1980



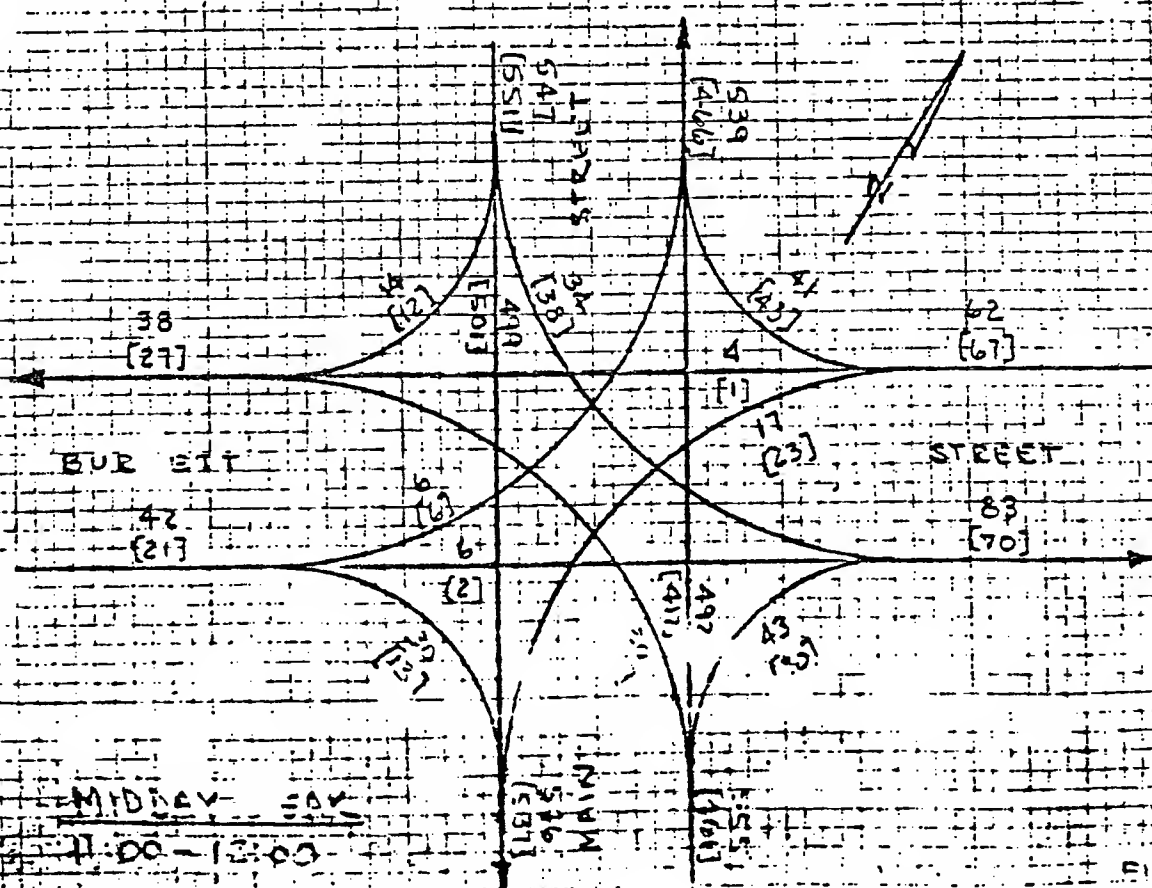
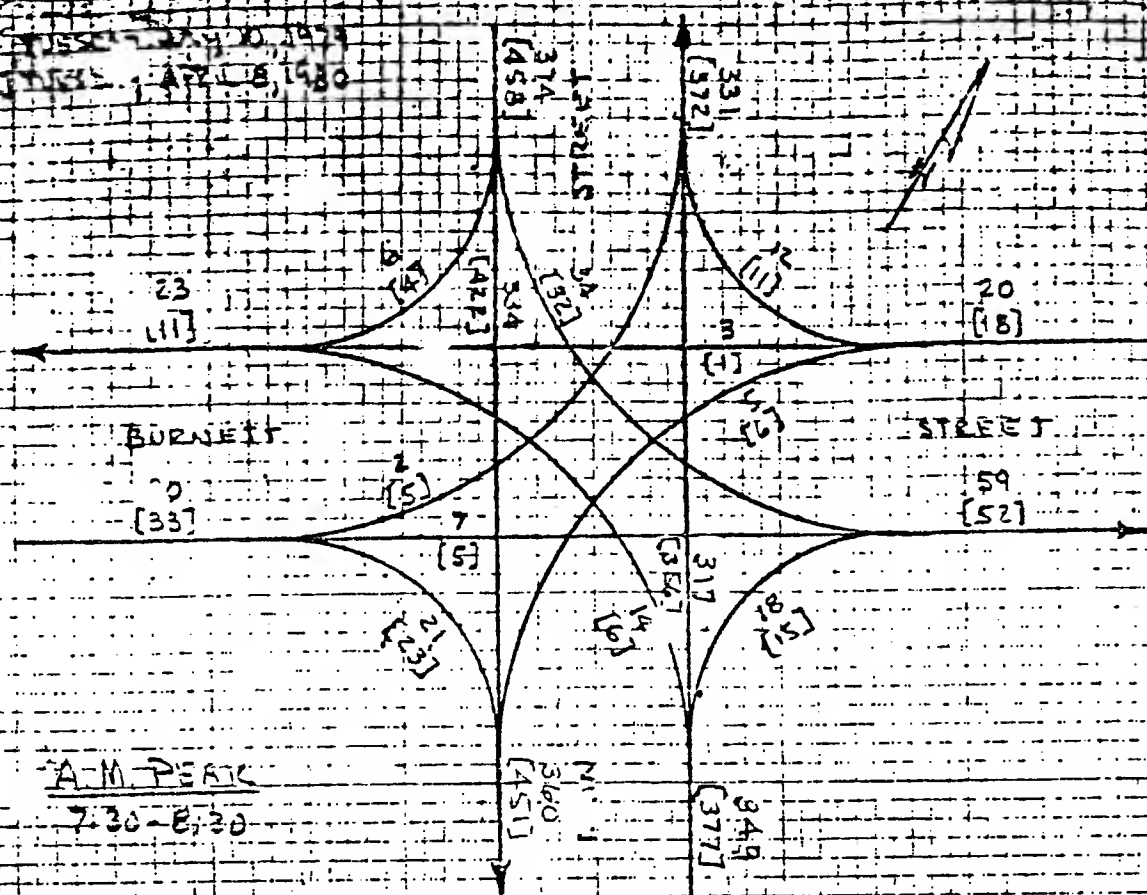
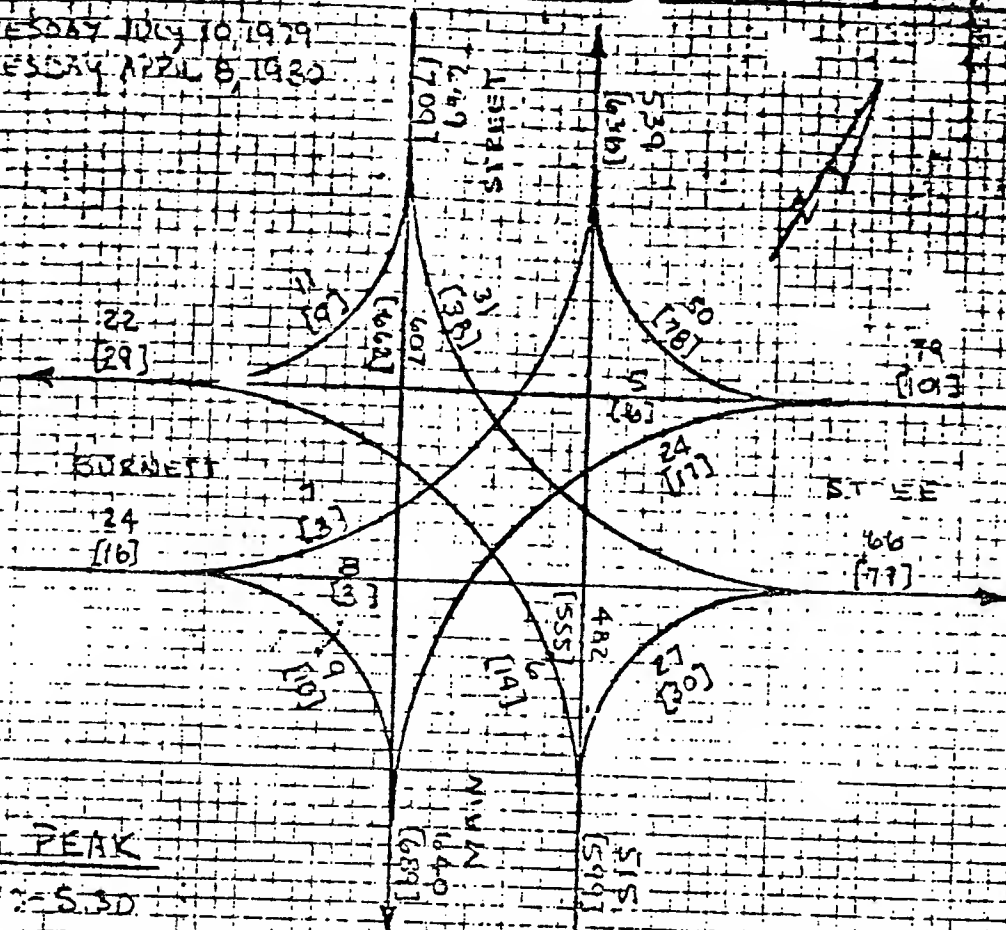


FIGURE 4A

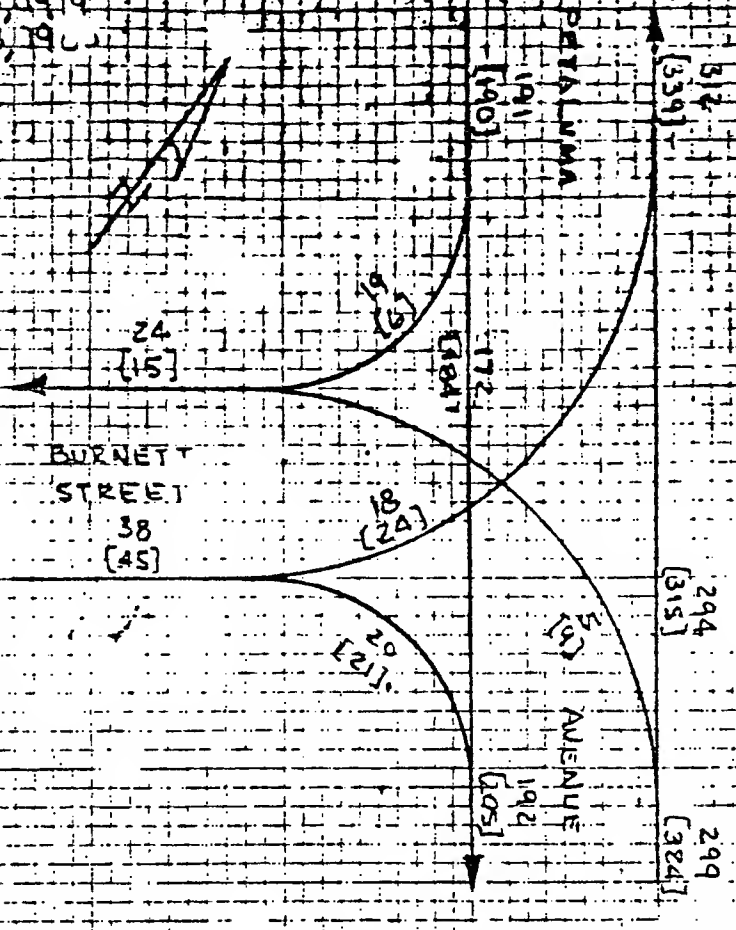
1000 TUESDAY JULY 10, 1979
 0000 TUESDAY APRIL 5, 1980

P.M. PEAK
 4:45-5:30



000 TUESDAY 10 10 1959
 000 TUESDAY APRIL 8, 1960

A.M. PEAK
 7:30-8:30



MIDDAY PEAK
 8:00-12:00

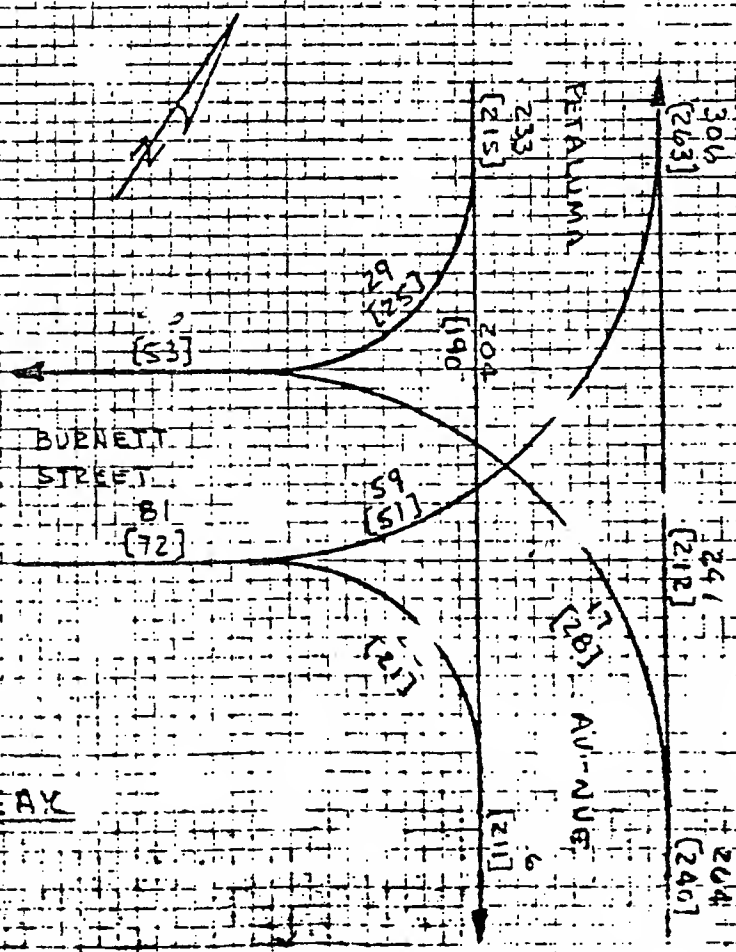


FIG. 6-1A

000 TUESDAY APR 1 1980
000 TUESDAY APR 2 1980

PM PEAK
4:30-5:30

BUTLER STREET

PETALUMA

327 AVENUE

56
(66)

73
(91)

AA
(52)

24
(39)

280
(307)

304
(328)

309
(346)

279
(289)

275
(237)

307
(282)

FIGURE 5B

000 TUESDAY JULY 10 1979
000 TUESDAY APRIL 8, 1980

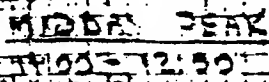
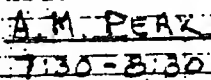
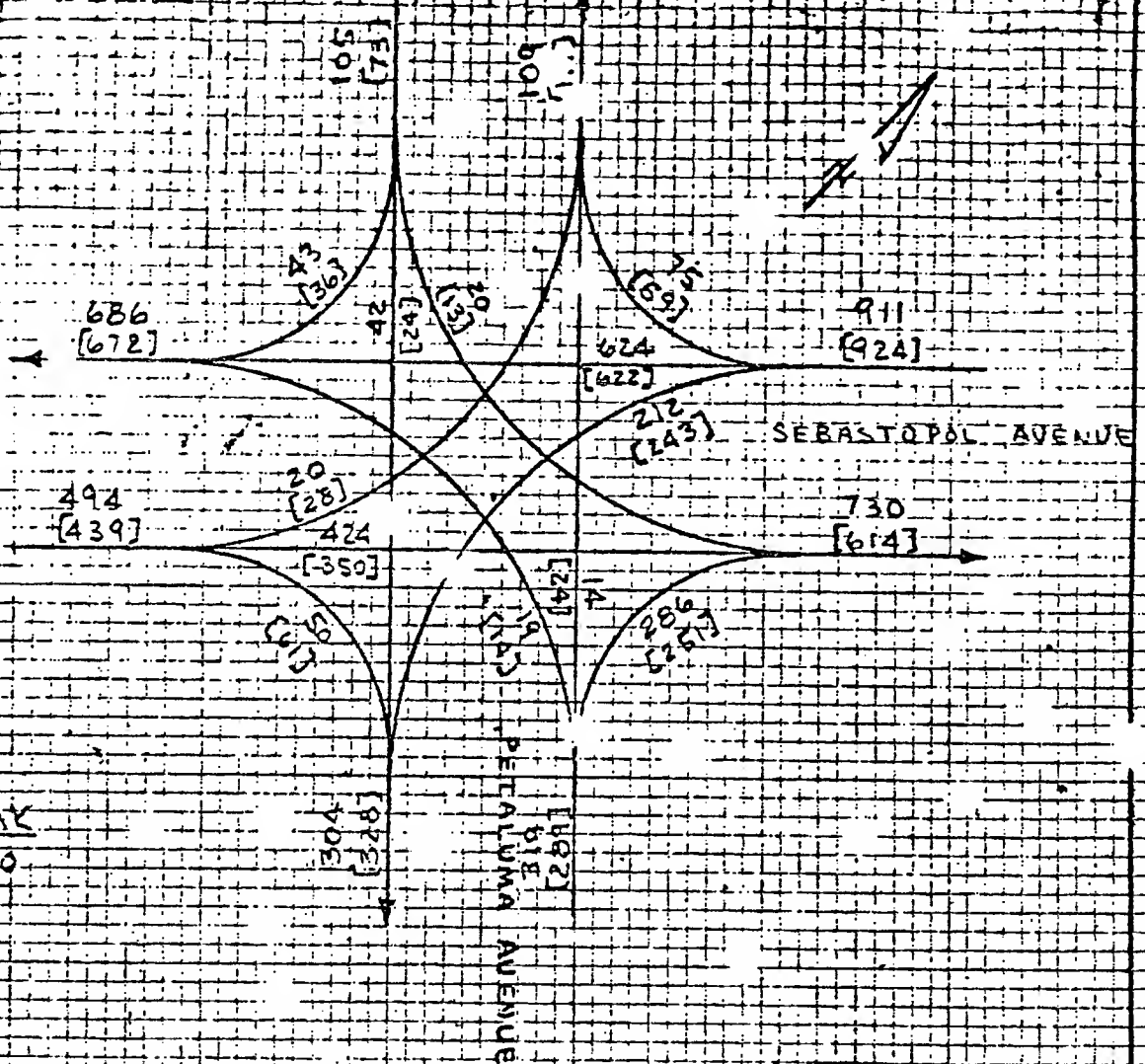


FIGURE 2



M-F-AK
30-5:30

五、

State of California

Memorandum

: Project Development C Branch

Date: October 30, 1979

Attention: R. W. Crockett

File : 04-Son-12,116
One-way Couplets
in Sebastopol
04225-208651From : **DEPARTMENT OF TRANSPORTATION**
04 Highway Operations Branch

Subject:

As requested in your June 29, 1979 memorandum, we have made a capacity analysis for the proposed one-way couplets in the City of Sebastopol. The analysis is based on peak hour traffic counts taken in July, 1979. Since no future traffic data was furnished, we estimated 1985 traffic operation. Also as requested, we have estimated existing and 1985 traffic speeds on the couplet streets.

Three alternates were analyzed: the no build alternate; north-south one-way couplet only; north-south/east-west one-way couplets. See Figure 1 in the attached report for the couplet locations.

The capacity analysis is summarized in Tables I and II in the attached report. The impact of the proposed one-way couplets on traffic operation of the downtown intersections is described briefly below:

1. Main Street/McKinley Street: The no build alternate ILV's for this intersection would be reduced by both the north-south couplet and north-south/east-west couplets alternates.
2. Main Street/Sebastopol Avenue/Bodega Avenue: The no build high AM and PM peak hour ILV's would be greatly reduced by the north-south/east-west couplets. Existing congestion would be eliminated. However, the north-south couplet only alternate does not reduce the PM peak hour ILV significantly.
3. Main Street/Burnett Street: The no build ILV is reduced by both couplet alternates.
4. Petaluma Avenue/Burnett Street: The one-way couplets increase the no build ILV due to the shift in traffic to these streets, but even with this increase there would be no significant delays.
5. Petaluma Avenue/Sebastopol Avenue: The no build PM peak hour ILV is reduced by the north-south/east-west couplets. However, the north-south couplet only alternate increases the no build AM peak hour ILV and does not change the PM peak hour ILV.

P/D C-Crockett
October 30, 1979
Page 2

The above intersections would operate with no significant delays in 1985 with the north-south/east-west couplets alternate. However, congestion would occur with the no build and north-south couplets only alternates at the Main Street/Sebastopol Avenue/Bodega Avenue and Petaluma Avenue/Sebastopol Avenue intersections.

E F Graham
E. F. GRAHAM
Senior Engineer
Highway Operations Branch

Attach

RCH:ey
cc: LN/EFG/RCH, ABB/HM, PHall(HQ), IFukutome(HQ), Hwy Ops File.

HIGHWAY OPERATIONS REPORT
CAPACITY ANALYSIS AND SPEED DATA
PROPOSED SEBASTOPOL ONE-WAY COUPLETS

INTRODUCTION

A project is proposed to convert existing two-way streets, including Routes 12 and 116, in the City of Sebastopol to north-south and east-west one-way couplets, in order to reduce traffic congestion (See Figure 1). Highway Operations was requested to provide a capacity analysis for the existing and proposed street systems, and also provide traffic speed data.

I. EXISTING TRAFFIC OPERATION

The Sebastopol streets proposed for one-way traffic were observed during the AM, midday and PM peak periods on July 19, 1979. Observation was concentrated on the Main Street/Sebastopol Avenue/Bodega Avenue intersection, where most of the existing congestion occurs. The traffic signal here is two-phase, and the lack of left turn phases causes continual conflicts between opposing through and left turn movements.

During the AM peak period, about 0800 to 0930, no significant congestion developed at this intersection. The midday peak period did have congestion, with some vehicles waiting more than one signal cycle to clear the intersection. The left turn queue on the southbound Main Street approach sometimes extended beyond the storage lane. The northbound Main Street queue at the McKinley Street intersection sometimes extended through the Sebastopol Avenue-Bodega Avenue intersection, causing further congestion there. Traffic operation during the PM peak period was slightly less congested than midday, with occasional vehicles waiting more than one signal cycle. The observed peak period level of service was C for AM and C-D for midday and PM.

Trucks were observed having difficulty making the left turn from southbound Main Street to eastbound Sebastopol Avenue, and the right turn from westbound McKinley Street to northbound Main Street. The tight truck turns at these intersections are one cause of a higher level of congestion than the traffic volumes would indicate.

A three-car train passed down Main Street twice during the off-peak periods, but did not significantly affect traffic operation.

II. CAPACITY ANALYSIS

This capacity analysis covers three alternates: the no build alternate; north-south one-way couplet only; north-south and east-west one-way couplets. Figures 2, 3 and 4 show the lane assignments for these alternates. Table I below gives the calculated intersection lane vehicles (ILV) and corresponding traffic operation during the A.M. and P.M. peak hours for the intersections at which peak hour traffic counts were taken in July, 1979. The existing two-way traffic volumes were reassigned for the one-way couplets analysis.

TABLE I
PEAK HOUR ILV(1) FOR EXISTING TRAFFIC
SEBASTOPOL ONE-WAY COUPLETS

<u>Intersection</u>	<u>Alternate</u>					
	<u>No Build</u>		<u>North-South One-way Couplet</u>		<u>North-South East-West One-way Couplets</u>	
	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>
Main St./Mckinley St.	750	880	630	730	630	730
Main St./Sebastopol Ave./ Bodega Ave.	960	1080	800	1070	520	620
Main St./Burnett St.	620	740	310	360	540	540
Petaluma Ave./Burnett St.	360	410	460	450	740	700
Petaluma Ave./Sebastopol Ave.	630	970	800 730 *	970 820	620	720

Note:

* Revised lane distribution Feb. 82

- (1) Intersection Lane Vehicles - the sum of the conflicting interchange movements, on a vehicles per lane basis.

<u>ILV</u>	<u>Description of Traffic Operation</u>	<u>Level of Service</u>
0-1000	No significant delay	A-B
1000-1200	Minor delays - most vehicles clear on each signal cycle	C
1200-1500	Congested - many vehicles wait more than one signal cycle	D-E
1500+	Heavy congestion - long delays, duration of congestion more than one hour.	F

Main Street/McKinley Street: The no build ILV for this intersection would be reduced by both the north-south couplet alternate and the north-south/east-west couplets alternate. The southbound Main Street traffic will be in two lanes, rather than one as at present. The diverted northbound traffic on the westbound McKinley Street approach will also have two lanes. This increase in capacity is offset somewhat by a small increase in the left turn from westbound McKinley Street to southbound Main Street.

Main Street/Sebastopol Avenue/Bodega Avenue: The Main Street/Sebastopol Avenue/Bodega Avenue intersection AM and PM peak hour ILV's would be greatly reduced if the north-south/east-west one-way couplets were implemented. Existing congestion and delays would be eliminated. However, with the north-south one-way couplet only alternate the PM peak hour ILV is about equal to the existing. The elimination of the left turns on Main Street is offset by a large increase in the left turn volume from westbound Sebastopol Avenue to southbound Main Street. These additional left turn vehicles now turn left at Petaluma Avenue.

Main Street/Burnett Street: The ILV is reduced by both couplet alternates. However, the existing ILV is low, and no significant delays occur at this intersection.

Petaluma Avenue/Burnett Street: The one-way couplets increase this intersection's existing ILV, due to the shift of northbound traffic from Main Street to Petaluma Avenue, and eastbound traffic from Bodega Avenue-Sebastopol Avenue to Burnett Street. The ILV is increased significantly by the north-south east-west couplets, but even with this increase there would be no significant delay at this intersection.

Petaluma Avenue/Sebastopol Avenue: At this intersection the PM peak hour ILV is reduced significantly with the north-south/east-west couplets. However, with the north-south couplet only, the AM peak hour ILV is more than the no build, and the PM peak hour ILV is the same as the no build, because the elimination of the left turn from westbound Sebastopol Avenue is offset by the increase in the northbound Petaluma Avenue volume.

1985 ILV's: Table II below gives the estimated ILV's for year 1985. Since 1985 traffic volumes were not furnished, these ILV's were obtained by projecting the year 1979 ILV's (Table I), using the average annual peak hour traffic growth rate on Routes 12 and 116 at the Main Street/Sebastopol Avenue intersection for the past five years. This projection assumes that the future average traffic growth rate will be the same as in past years, and uniform for all intersection traffic movements. Since in reality this will not occur, the Table II ILV's are only approximations.

TABLE II
PEAK HOUR ILV FOR YEAR 1985 TRAFFIC
SEBASTOPOL ONE-WAY COUPLETS

<u>Intersection</u>	<u>Alternate</u>					
	<u>No Build</u>		<u>North-South One-way Couplet</u>		<u>North-South East-West One-way Couplets</u>	
	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>
Main St./McKinley St.	980	1140	820	940	820	940
Main St./Sebastopol Ave./ Bodega Ave.	1250	1400	1040	1390	680	810
Main St./Burnett St.	800	960	400	470	700	710
Petaluma Ave./Burnett St.	470	540	600	580	960	910
Petaluma Ave./Sebastopol Ave.	820	1270	1040	1260	810	940

As shown in Table II, all the intersections will operate with no significant delays in 1985 with the north-south/east-west couplets alternate. However, the Main Street/Sebastopol Avenue/Bodega Avenue intersection will have serious congestion during the PM peak hour for the no build and north-south couplets alternates. The Petaluma Avenue/Sebastopol Avenue intersection will also have congestion during the PM peak hour for the no build and north-south couplet alternates.

III. ROUTE SPEEDS

The peak hour and off-peak traffic speeds shown in Table III are based on PM peak hour and off-peak tachograph runs made on September 20, 1979.

TABLE III
1979 TRAFFIC SPEEDS

<u>Street</u>	<u>Direction</u>	<u>No Build</u>	<u>Average Speed, MPH</u>			<u>No Build</u>	<u>Off-peak</u>	
			<u>Peak</u>	<u>Hour</u>			<u>N-S</u>	<u>N-S/E-W</u>
Main Street	Northbound	11	-	-		19	-	-
Main Street	Southbound	18	18	20		20	20	20
Petaluma Blvd.	Northbound	19	19	17		17	17	17
Petaluma Blvd.	Southbound	17	-	-		21	-	-
Sebastopol-Bodega Ave.	Eastbound	12	12	-		14	14	-
Sebastopol-Bodega Ave.	Westbound	9	9	11		11	11	11
Burnett Street	Eastbound	14	14	16		16	16	16
Burnett Street	Westbound	11	11	-		13	13	-

Because of the low peak hour volumes on Petaluma Boulevard, there is essentially no difference in the peak hour and off-peak speeds. In fact, our sample has a higher northbound speed during the PM peak hour than in the off-peak period.

The speeds for Burnett Street were estimated to be two mph higher than the Sebastopol-Bodega Avenue speeds. Existing traffic on Burnett Street is very light, with occasional short queues, but is periodically delayed by approximately the same Main Street queues which cross Sebastopol-Bodega Avenue.

The estimated 1985 traffic speeds are listed in Table IV below.

TABLE IV
1985 TRAFFIC SPEEDS

<u>Street</u>	<u>Direction</u>	<u>Average Speed, MPH</u>					
		<u>No</u>	<u>Peak Hour</u>		<u>No</u>	<u>Off-peak</u>	
		<u>Build</u>	<u>N-S</u>	<u>N-S/E-W</u>	<u>Build</u>	<u>N-S</u>	<u>N-S/E-W</u>
Main Street	Northbound	7	-	-	19	-	-
Main Street	Southbound	9	9	20	20	20	20
Petaluma Blvd.	Northbound	13	13	17	17	17	17
Petaluma Blvd.	Southbound	12	-	-	21	-	-
Sebastopol-Bodega Ave.	Eastbound	4	4	-	14	14	-
Sebastopol-Bodega Ave.	Westbound	3	3	11	11	11	11
Burnett Street	Eastbound	14	14	16	16	16	16
Burnett Street	Westbound	11	13	-	13	13	-

These 1985 traffic speeds were based on the ILV's in Table II. The high ILV's for the no build and north-south couplet alternates at the Main Street/Sebastopol Avenue/Bodega Avenue intersection were assumed to cause two minutes additional delay on these streets. Similarly, the high ILV's at the Petaluma Avenue/Sebastopol Avenue intersection were assumed to cause one minute additional delay on Petaluma Avenue. Since the ILV's for the north-south/east-west couplets alternate are all low, the peak hour speeds were assumed to be the same as the off-peak speeds. The 1985 off-peak speeds were assumed equal to the existing for all the alternates.

R. C. Harrison
RCH

R. C. HARRISON
Highway Operations Branch

RCH:ey

Exhibit 10

Insert Categorical Exclusion / Exemption

Exhibit 11

Insert Right of Way Data Sheets

~~Exhibit 12~~

Insert Geometrics of the Route 12 / Petaluma Ave Intersect

2

SON-116
04225
203650

2BP
11x18

Memorandum

EXHIBIT 13

MATERIALS FILE

To : R. D. SAYRE
Branch C

Date: May 15, 1979

File : 04-Son-12,116
PM 9.2/9.4;26.5/27.5
04225 - 208651

From : DEPARTMENT OF TRANSPORTATION
D. T. Cassinelli

Subject:

Reference is made to your memo dated 1/3/79 requesting the Materials Section's recommendation regarding the structural adequacy of the proposed couplets of Routes 12 and 116 in the City of Sebastopol.

I. GENERAL

A. Location & Limits

The project under consideration, initiated at the request of the City of Sebastopol, proposes converting Routes 12 and 116 into one-way couplets through Sebastopol.

Route 12 currently carries both east and westbound traffic along Sebastopol St. (1 block) and Bodega Ave. (1 block). This proposed change would convert these 2 blocks of one-way traffic westbound. Eastbound Route 12 traffic would travel High St. one block south, Burnett St. 2 blocks east and Petaluma Ave. 1 block north, completing this couplet.

Route 116 currently carries both north and southbound traffic along Gravenstein St. and Main St. This proposed change would convert this route into one-way traffic southbound. Northbound traffic would travel Petaluma Ave. northerly and McKinley St. west, completing this couplet.

The Route 12 couplet would add 0.2 centerline miles to the State Highway System; the Route 116 couplet would add 0.8 centerline miles.

B. Scope

The soils investigation consisted of 6 hand boring holes made to determine the thickness and condition of the roadway section and the quality of the native soil. Skid resistance tests were taken on Petaluma Ave. to determine the characteristics of the AC pavement.

C. Attachments

Location Map

Proposed Traffic Routes

EAL memo dated 2/28/79 and Drawings 7A and 7B, showing 10-year and 20-year EAL's

Standard Soil Sheets

Skid Resistance Tests.

II. EXISTING FACILITIES

A. Existing Routes 12 and 116

Route 116, Gravenstein and Main Streets, transverses the downtown area of Sebastopol. The roadway consists of 2 traffic lanes with curb parking on both sides of the street. Railroad tracks run down the center of Route 116, through the most congested section of the business area.

Route 12, the primary east-west thorough fare, crosses Route 116 in the downtown area. The Route 12 roadway consists of 2 traffic lanes with parking on both sides of the street.

The roadway surfacing, curbs and gutters on both Routes 12 and 116 are in good condition.

B. City Streets Proposed for Routes 12 and 116 Couplets

1. Proposed Route 116 for northbound traffic:

- a. Petaluma Ave. is in fair condition. The pavement is AC. Some sections have PCC curb and gutter, but mostly there is only PCC curbs.
 - b. Curb and gutter reconstruction was recently underway on the west side of Petaluma Ave. between Burnett St. and Sebastopol Rd. The existing AC surfacing will require some overlay to conform to the reconstructed gutter.
 - c. McKinley St. is AC and in fair condition.
2. Route 12 (proposed for eastbound traffic):
- a. High St. has AC pavement. There are some failed areas and random cracks.
 - b. Burnett St., between High and Main Streets, is PCC pavement that has some faulting along the joints, slab cracks, and some AC patches. East of Main St., Burnett St. has AC surfacing with some random cracks and broken pavement near Petaluma Ave.

III. TEST RESULTS

The results of tests made on samples taken from hand borings are tabulated on the attached soil sheet.

The native soils are composed mainly of fine grain sands and clays with Rv of 70 to 74 in 5 of the 6 sites tested. One test site had an Rv of 37 for the native soil. Rv of the base materials on all test sites ranged from 73 to 81.

IV. TRAFFIC

The District Transportation Planning Branch has furnished Drawings EAL 7A and 7B. These project EAL's for 10 and 20 years respectively. We converted these EAL's to traffic index figures which we consider representative of the traffic rerouted along Routes 12 and 116.

On Route 12, the assigned TI's are 8.0 and 9.0 for the 10- and 20-year design periods.

R. D. Sayre
Page 4
May 15, 1979

On Route 116, the assigned TI's are 9.0 and 10.0 for the 10- and 20-year design periods.

V. ROADWAY STRUCTURAL SECTION

- A. To evaluate the strength of existing pavements of the streets proposed to be incorporated into the State Highway System, the following GE factors were assigned to the various layers of materials:

	<u>gf</u>
AC	1.5
Bituminous mix (oil & rock)	1.2
Untreated rock base	1.1

- B. Petaluma Ave. (NB one-way traffic)

Design Factors:

1. Between Gravenstein & Burnett St.

	<u>TI</u>	<u>Rv</u>	<u>GE</u>
10-yr.	9	37	1.81'
20-yr.	10	37	2.02'

2. Between Burnett St. & Sebastopol Rd.

	<u>TI</u>	<u>Rv</u>	<u>GE</u>
10-yr.	9	70	0.86'
20-yr.	10	70	0.96'

3. Existing Roadway Structural Section:

0.40' AC x 1.5 gf	0.60' GE
<u>1.00'</u> Base rock x 1.1 gf	<u>1.10'</u> GE
1.40'	1.70'

- C. Petaluma Ave. & McKinley St. (NB one-way)

1. Between Sebastopol Rd. & Main St.

Design Factors:

	<u>TI</u>	<u>Rv</u>	<u>GE</u>
10-yr.	9	70	0.86'
20-yr.	10	70	0.96'

2. Existing roadway structural section:

0.15' AC x 1.5 gf	0.23' GE
<u>0.85'</u> Base rock x 1.1 gf	<u>0.94'</u> GE
1.00'	1.17'

D. High St. & Burnett St. (EB one-way)

1. Between Bodega Ave. & Petaluma Ave.

Design Factors:

	<u>TI</u>	<u>Rv</u>	<u>GE</u>
10-yr.	8	70	0.77'
20-yr.	9	70	0.86'

2. Existing Roadway - High St. structural section:

0.15' AC x 1.5 gf	0.23' GE
0.35' Base rock x 1.1 gf	0.39' GE
<u>0.50'</u> Subbase x 1.0 gf	<u>0.50'</u> GE
1.00'	1.12' GE

3. Burnett St. has PCC pavement in a one block area, from High to Main Streets.

We do not have any information of the thickness of the PCC pavement or the type of material under the PCC pavement. However, the pavement slabs appear sound, but do have minor faulting, some AC patches, and some random cracks.

4. Existing Roadway (Burnett St. between Main St. and Petaluma Ave.)

0.10' AC x 1.5 gf	0.15' GE
0.35' Bituminous treated rock x 1.2 gf	0.42'
<u>0.55'</u> Base rock x 1.1 gf	<u>0.61'</u>
1.00'	1.18'

E. Condition of City Streets Proposed as Couplets for Routes 12 and 116

The calculated GE's on most of the city streets are higher than the State's minimum GE requirement. This is because the Rv of the basement soil is very high. However, in most cases, the thickness of the AC pavement is less than the State's required minimum thickness for a properly designed structural section.

The one block of PCC pavement on Burnett St. shows some minor distress. On McKinley St., the fines in the AC pavement are wearing away and there are several locations where trenching was done, some random cracking and a few locations with failed pavement.

Skid resistance test results are adequate.

VI. COMMENTS

The existing City streets appear structurally sound. They should continue to serve local city traffic adequately for some time. However, routing State highway traffic onto these city streets will rapidly accelerate their deterioration, unless the structural section is increased to handle this additional traffic.

VII. RECOMMENDATIONS

Remove all failed areas and repair with 5" of full depth AC. Clean and fill the large cracks in the PCC pavement on Burnett St. Plane the existing AC surfacing 3/4" deep along the lip of existing gutters, tapering to nothing 6' from the gutter lip.

Overlay the traveled way with 0.15' AC and taper the

R. D. Sayre
Page 7
May 15, 1979

overlay to 0.10' at the curb face or gutter lip.

Asphalt concrete should be Type A, 3/4" maximum grading.

APPROVED BY

D. T. CASSINELLI *DS*
Materials Engineer

JG/SS:ot
cc: Files-2

Exhibit 15

Insert FHWA Project Report Review

RECORD OF MEETING OR CONVERSATION

208650

Memorandum

TO: The File	FILE: 04-SON-116 Sebastopol Couplet
	FROM: Bob Perry

WHERE HELD

☐ BY TELEPHONE ☐ DISTRICT OFFICE ☐ AT OTHER PARTY'S OFFICE ☒ OTHER PROJECT SITE

INITIATED BY

☐ DISTRICT ☒ OTHER PARTY P.U.C. ☐ OTHER

PARTICIPANTS

DATE OF CONVERSATION 4-14-82

NAME	TITLE & AFFILIATION
Bob Crockett & Bob Perry	Caltrans Proj. Dev.
Abi Morimoto & Ed Wong	✓ Traffic
George Ramirez & Staff	✓ Elect. Design
Ed Thurban	California P.U.C.
Cal Gerhardt & Staff	Petaluma & Santa Rosa Railroad (INUP, SPTC)
Sebastopol officials & Representatives	

SUBJECT Site meeting to determine needs for grade crossing protection as required by the California Public Utilities Commission

Introductions were exchanged and Ed Thurban discussed the scope of the meeting and early opinion of the office study.

Each crossing location was visited as was the track area on Main Street. It was agreed that the only protection required for the grade crossings are crossbucks and pavement markings. These will also be required at certain cross streets and at State expense Ed Thurban will followup on all locations.

There was extensive discussion regarding the track in Main Street. It was agreed that the train will not be a problem because of its size and visibility. The problem will be with the smaller maintenance car which must make track inspections at least once a week. After quite a bit of brainstorming, it was determined that a "highroller", an off-on ^{track} vehicle could drive legally northbound, turn around, and make inspection on-track southbound. on Petaluma

cc ✓ ML - RWC - RBP, JWB - RHC - HM, VHW - GNR, RCC - DRR, Ed Thurban

STATE OF CALIFORNIA

OFFICE MEMO
STD. 100 (REV. 11-75)

1. *Ed*
2. *Bob*

(64)

DATE
4-26-82

TO:

Bob Perry

ROOM NUMBER

FROM:

Ed Thurban

PHONE NUMBER

SUBJECT:

Meeting Roster

Attached is a copy of the
roster that I had promised to obtain
for you.

As for a file memo, yours was
so complete that I used it for our file.
It's been great working with you.

CITY OF SEBASTOPOL
CITY COUNCIL MINUTES OF May 5, 1982 (Wednesday)
REGULAR ADJOURNED MEETING

EXHIBIT 17

Place : Veterans' Building, 282 High Street
Time : 7:00 p.m.

Mayor Gwen Anderson called the regular adjourned meeting to order at 7:00 p.m.

Salute to the Flag was led by City Attorney Dermott.

ROLL CALL: Present were Councilmen Bob Anderson, Doms, Miller, Nomura and Mayor Gwen Anderson

Staff Present: City Attorney Dermott
City Engineer Schoch
Fire Chief Shura
Police Chief Baker
City Manager Davis

Mayor Gwen Anderson reported on the sad passing of the late Police Chief, John Ellis.

APPROVAL OF THE WARRANTS: Councilman Miller moved and Councilman Doms seconded the motion to approve payroll registry of April 30, 1982 in total amount of \$23,833.44 and warrants in total amount of \$267,168.83. Motion carried unanimously.

APPROVAL OF THE MINUTES: Councilman Bob Anderson moved and Councilman Miller seconded the motion to approve Minutes of April 21, 1982. Motion carried unanimously.

Councilman Miller moved and Councilman Doms seconded the motion to approve Minutes of April 26, 1982. Councilman Nomura noted, missing is the comment on downzoning by Councilman Doms. Councilman Doms stated she did not recall any such specific statement, only that the plan is a 20-year plan. Motion carried unanimously and Minutes approved as written.

1. REVIEW, PROPOSED ONE-WAY STREET SYSTEM

References: Notice of Public Meeting by Caltrans; Final Report, Implementation of One-Way Street System prepared by Walter W. Laabs, Jr., dated October 1981

a. Review by Caltrans Representative & City Traffic Consultant

Mr. Milton Louie, Chief of Project Development, Branch C, and associates Bob Crockett & Dennis Raddel (Environment Review Sec.) were present and reviewed the plan.

Mr. Louie reviewed background of development of project, with City Council in 1978 adopting a resolution asking that the 1-way street system be implemented.

Mr. Crockett reviewed the proposed 1-way street plan, for North-South, and advantages. He reported on the existing State highways,

1. ONE-WAY STREET SYSTEM, Continued:

a. Review, Continued:

there is considerable congestion and overly high accident rates. In 1979-81, 60 accidents on Sebastopol Ave. with 15 injuries, with accident rate of 11.75/M miles;

450% greater than State average.

1979-81, 130 accidents on Main St. with 32 injuries, with accident rate of 7.5/M miles;

200% greater than State average.

The 1-way (North-South) street system increases capacity and eliminates left-turn conflicts. The accident rates then should come back down to State-wide average. We are recommending no parking on Sebastopol Ave., West of Petaluma Ave. and no parking on South sides of Fannen & Walker. If there's no 1-way street system, an alternative is to provide 4 moving lanes on existing highways, by eliminating all parking.

Councilman Nomura asked how long is the City expected to maintain Petaluma Ave.? At one time I understood it was to be 5 years.

Mr. Crockett replied that's been changed now, and we're no longer specifying a set time. Hopefully, as soon as we have funding to repave Petaluma Ave., then we'll take over its maintenance responsibility. Could be much earlier than 5 years.

b. Public Comments

Mayor Gwen Anderson opened the public hearing.

Mr. Bruce Wakelee, Pres., Chamber of Commerce, asked what are advantages of North-South vs. East-West system?

Mr. Crockett replied on East-West, streets aren't in as good condition as with North-South, and would require 2 sets of new signals instead of 1, as with North-South; and residences along High & Burnett would be more impacted by noise, unlike change on Petaluma Ave. The process for approval for East-West system would take longer. It's up for further consideration and funding in the future.

Mr. Don Fiori, 7451 Blossomwood Ave., asked if speed limits would remain the same?

Police Chief Baker replied, Yes, at 25 mph.

Mr. Ted Cordua, 7225 Hayden Ave., asked at the Post Office, won't it be more difficult to cross So. Main St. to reach the post office? Can there be some special signing to warn motorists?

Mr. Crockett replied he'd need to refer that to Police Chief. But there will be less traffic there, than now, and it will all be going in one direction. It will be safer to use the crosswalk.

1. ONE-WAY STREET SYSTEM, Continued:

b. Public Comments, Continued:

Police Chief Baker added one thing that might be done is to move parking back away from pedestrian crossing lane. Also, cars coming down Willow won't be making a left turn, thru the pedestrian crosswalk, again, making it safer there for pedestrians.

Mr. Hanafi Russell, Sebastopol Times, asked what is the time frame on carrying this out?

Mr. Crockett replied next steps are reviews by SHIPPO (State Historical Office) & Federal agency; then we'll complete our reports. It will take 2 months. We're also awaiting CTC funding. If approved, 2-3 months for design. Construction to start next Spring. I realize that's about 1 year later than you've been told up until now.

Mr. Walter Laabs, Traffic Consultant, reported City will proceed anyway with it's new traffic signal at Petaluma & Sebastopol Avenues by next Fall. If Caltrans isn't yet ready, then signals will initially work as a 2-way signal until Caltrans is ready with the 1-way system.

Mr. Ted Williams, Tidal Wave Car Wash, 795 So. Gravenstein, asked what happens with traffic on So. Gravenstein? All this doesn't help me. You can't make a left turn from 5:00 to 6:00 p.m. on So. Gravenstein.

Councilman Bob Anderson replied, you're right. All you can hope for later is a traffic signal down your way, in the future. If Route E ever goes in, there will be a signal at the intersection of So. Gravenstein & Route E, and that will divert some traffic off So. Gravenstein.

Mr. Richard Johnson, 499 Hansen Lane, asked how the 1-way could be cancelled if it turns out to be a mistake?

Mr. Crockett replied if participants (City & State) feel it's a mistake, after a year's evaluation, then City Council could ask and CTC could act, to cancel it. It is provided for in State Code. But it would take both City Council and State acting, to cancel it.

Mr. Norm Stupfel, 195 No. Main St., stated Sebastopol has been looking for traffic solution since 1952. He quoted from the 1952 report complaining then about congestion. I feel the 1-way couplet will relieve this mess and make it much safer for pedestrians.

Mr. Louie added, he felt it would work well. In Eureka, Crescent City & Redding, all 3 cities have successfully implemented 1-way street systems in recent years.

Mrs. Regina Reeves, 330 So. Main, asked how will traffic merge into 1 lane?

1. ONE-WAY STREET SYSTEM, Continued:

b. Public Comments, Continued:

Mr. Crockett replied, describing the left-turn merge lanes at Petaluma & So. Gravenstein intersection.

Mr. Cordua asked how will City fund its share of the cost?

City Manager Davis replied funds for the traffic signal at Petaluma & Sebastopol Avenues are on hand.

Mr. Wakelee asked how will trucks make turn move at McKinley & No. Main Street?

Mr. Crockett replied there's room. At present, there are 3 lanes. Under new plan there's 2, which means wider area for turns.

Councilman Doms added, also radius can be widened at the curb. There's sufficient sidewalk area to allow for a greater radius.

No one else asking to speak, Mayor Gwen Anderson closed the hearing.

c. Council Action

Councilman Miller asked on Petaluma Avenue, is noise a disadvantage to residents?

Mr. Crockett replied there'll only be a slight increase. Not enough decibels for residents to notice the difference.

Councilman Bob Anderson asked regarding merger, will there be a physical barrier?

Mr. Crockett replied, No, we'd prefer to try it first with painted zone.

Councilman Doms asked is the 1 year delay due to money or bureaucracy We need this as soon and as desperately as possible.

Mr. Crockett replied, we could advertise in October, but I don't expect that. The delay is due to bureaucracy.

Mayor Gwen Anderson stated she only hoped the future City Council pursues this.

Councilman Doms asked didn't the County also set aside funds?

City Manager Davis replied Yes, in the 1982-83 County budget, there's \$100,000 for Sebastopol to implement 1-way street system. The County has not precisely stipulated what portion of 1-way system it should go for. I've shown it for now in City's budget as going toward reconstruction of Burnett St. (East-West), as that's one of the most expensive items. But it could be assigned for some other portions, such as traffic signals.

1. ONE-WAY STREET SYSTEM, Continued:

c. Council Action, Continued:

Councilman Bob Anderson moved and Councilman Doms seconded the motion to reaffirm Resolution No. 3042 adopted October 2, 1978, to implement a 1-way street system and to call upon Caltrans, County and all other agencies to cooperate and implement the system as soon as possible.

Voting Aye: Councilmen Bob Anderson, Doms, Miller, Nomura and
Mayor Gwen Anderson

Voting No: None

2. REVIEW OF SIGN ORDINANCE

References: Memo from Downtown Working Committee dated April 27, 1982; Memo from Planning Commission dated April 29, 1982; Excerpt from Downtown Working Committee Minutes of April 8, 1982; Memo dated February 16, 1982; Memo from Planning Consultant dated March 31, 1982; Mayor's letter dated April 29, 1981; Sign Ordinance dated 5/18/81; Letter from Chamber of Commerce dated April 29, 1982

a. Report from Downtown Working Committee

Mr. Norm Stupfel, Chairman, Downtown Working Comm., reported Committee is recommending a 6-year amortization for Section 5 of the Sign Ordinance, and that it be amended with that. Our vote was 7 to 1, in favor of amortization. Most of opposition has come from Chamber of Commerce. As a past president and 9-year member of Board of Directors, I'd like to see Chamber less officious on this and more so on improving the business climate. I feel the Chamber poll was biased in its format. We ask you to re-instate the 6-year amortization clause.

Mr. Bud Daveiro, member of Chamber Board of Directors & of Downtown Working Committee, stated all the people I talk to want to leave non-conforming signs alone. Many have been in business for decades. It's unfair to them to take it down. I don't think the Chamber poll letter was biased.

Mr. Bruce Wakelee, Pres., Chamber of Commerce, stated 90% of respondents favor grandfather clause. Chamber Board voted 10 to 1 to favor grandfather clause. Amortization will invite numerous appeals and litigation. Why would you want to alienate so much of the business community?

Mr. Ted Williams, 2370 Blucher Valley Rd., stated this was hashed over 1 year ago. I'm opposed. One reason is vandalism. Signs less than 8' are readily subject to vandals, at Kentucky Fried Chicken, Puppy Shack and nearby real estate offices. Keep grandfather clause. Amortization adds unnecessary expense to the merchant.

b. Public Comments

Mayor Gwen Anderson opened the public comments.

TRAFFIC SIGNAL WARRANTS

04 SON 12 9.29
DIST CO RTE PM
Major St: SEBASTOPOL AVENUE Critical Approach Speed NT mph
Minor St: PETALUMA AVENUE Critical Approach Speed NA mph

Critical speed of major street traffic \geq 40 mph ☐
In built up area of isolated community of < 10,000 pop. ☐ RURAL (R)
☒ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				100% SATISFIED		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		80% SATISFIED		Yes <input type="checkbox"/> No <input type="checkbox"/>		
(U)		R		U		R						
APPROACH LINES	1		2 or more		2-9	10-11	11-12	12-13	13-14	14-15	15-16	Hour
Both Approch. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	966	860	872	945	937	1028	1159	1003
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	416	385	403	430	470	498	538	496

* NOTE Heavier of left turn movement from Major Street included when LT-phasing is proposed ☒

WARRANT 2 - Interruption of Continuous Traffic

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)		100% SATISFIED		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		80% SATISFIED		Yes <input type="checkbox"/> No <input type="checkbox"/>				
		U	R	U	R	U	R	U	R			
APPROACH LINES	1		2 or more		2-9	10-11	11-12	12-13	13-14	14-15	15-16	Hour
Both Approch. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	966	860	872	945	937	1028	1159	1003
Highest Approach Minor Street *	75 (60)	53 (42)	100 (80)	70 (56)	416	385	403	430	470	498	538	496

* NOTE Heavier of left turn movement from Major Street included when LT-phasing is proposed ☒

WARRANT 3 - Minimum Pedestrian Volume

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)			80% SATISFIED								Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	
		(U)	R	2-9	9-10	10-11	11-12	12-1	1-2	3-4	4-5			Hour	
Both Approch. Major Street	No Median	600 (480)	420 (336)	966	777	860	872	945	853	1028	1159				
	Raised 4' Median	1000 (800)	700 (560)												
Ped's On Highest Volume X-Walk Xing Major Street		150 (120)	105 (84)	10	2	2	2	2	14		3				

IF MIDBLOCK SIGNAL PROPOSED ☐

MIN. REQUIREMENT	DISTANCE TO NEAREST ESTABLISHED CROSSING	FULFILLED
150 Feet	N/E _____ ft S/W _____ ft	Yes <input type="checkbox"/> No <input type="checkbox"/>

WARRANT 4 - School Crossings

Not Applicable ☐
See School Crossings Warrant Sheet ☐

TS-10A

TRAFFIC SIGNAL WARRANTS

EXHIBIT 18

WARRANT 5 - Progressive Movement

Satisfied Yes ☐ No ☐

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	FULFILLED
> 1000 ft	N _____ ft, S _____ ft, E _____ ft, W _____ ft	YES <input type="checkbox"/> NO <input type="checkbox"/>
ON ISOLATED ONE WAY ST. OR ST. WITH ONE WAY TRAFFIC SIGNIFICANCE ADJACENT SIGNALS ARE SO FAR APART THAT NECESSARY PLATOONING & SPEED CONTROL WOULD BE LOST		
ON 2-WAY ST. WHERE ADJACENT SIGNALS DO NOT PROVIDE NECESSARY PLATOONING & SPEED CONTROL, PROPOSED SIGNALS COULD CONSTITUTE A PROGRESSIVE SIGNAL SYSTEM		

WARRANT 6 - Accident Experience

Satisfied Yes ☒ No ☐

REQUIREMENT	WARRANT	✓	FULFILLED
ONE WARRANT SATISFIED 80%	WARRANT 1 - MINIMUM VEHICULAR VOLUME	<input checked="" type="checkbox"/>	
	WARRANT 2 - INTERRUPTION OF CONTINUOUS TFC	<input checked="" type="checkbox"/>	
	WARRANT 3 - MINIMUM PEDESTRIAN VOLUME	<input checked="" type="checkbox"/>	
SIGNAL WILL NOT SERIOUSLY DISRUPT PROGRESSIVE TRAFFIC FLOW			
ADEQUATE TRIAL OF LESS RESTRICTIVE REMEDIES HAS FAILED TO REDUCE ACC. FREQ.			
ACC. WITHIN A 12 MON. PERIOD SUSCEPTIBLE OF CORR. & INVOLVING INJURY OR \$200 DAMAGE			
MINIMUM REQUIREMENT	NUMBER OF ACCIDENTS		
5 OR MORE	7	<input checked="" type="checkbox"/>	<input type="checkbox"/>

* NOTE Left turn accidents can be included when LT-phasing is proposed

WARRANT 7 - Systems Warrant

Satisfied Yes ☐ No ☐

MINIMUM VOLUME REQUIREMENT	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
800 VEH/HR	DURING TYPICAL WEEKDAY PEAK HOUR _____ VEH/HR		
	DURING EACH OF ANY 5 HRS OF A SATURDAY AM/ OR SUNDAY _____ VEH/HR		
CHARACTERISTICS OF MAJOR ROUTES			
PART OF HWY SYSTEM SERVING AS PRINCIPLE NETWORK FOR THROUGH TFC			
CONNECTS AREAS OF PRINCIPLE TRAFFIC GENERATION			
RURAL OR SUBURBAN HWY OUTSIDE OF, ENTERING, OR TRAVELING A CITY			
HAS SURFACE STREET FWY ON EXPWAY RAMP TERMINALS			
APPEARS AS MAJOR ROUTE ON AN OFFICIAL PLAN			
ANY MAJOR ROUTE CHARACTERISTICS MET, BOTH STS.			

WARRANT 8 - Combination of Warrants

(Used if no one warrant satisfied 100%) Satisfied Yes ☐ No ☐

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1 - MINIMUM VEHICULAR VOLUME	<input type="checkbox"/>	
	2 - INTERRUPTION OF CONTINUOUS TRAFFIC	<input type="checkbox"/>	
	3 - MINIMUM PEDESTRIAN VOLUME	<input type="checkbox"/>	

The satisfaction of a warrant is not necessarily justification for signals. Delay, congestion, confusion or other evidence of the need for right of way assignment must be shown.

TS-10B

TRAFFIC SIGNAL EVALUATION SHEET									
INTERSECTION SEBASTOPOL AVE. (RTE 12) & PETALUMA AVE.									
WORK AUTH. NO.					DRAWN BY DWL		DATE 7-14-81		Ckd. BY HRA
DIST	CO	ROUTE	POST MILE		DWG NO.		REV. 12-8-81		
04	SON	12	9.29				FILE NO A9012.209		

COLLISION DIAGRAM

NO. OF LANES 2

ALL PEDESTRIANS			SCHOOL CHILDREN		
TOTAL	AM	PM	TOTAL	AM	PM
52	5	5	9	4	0

SEBASTOPOL

DAY	DATE
7:00 AM	7:00 PM

		HOUR	VOLUME
PEAK	AM	7:30-8:30	1450
	PM	4-5	1799

- TC. ROUTE 116

SCHOOL CHILDREN			ALL PEDESTRIANS		
TOTAL	AM	PM	TOTAL	AM	PEAK PM
9	0	5	55	1	11

NO. OF LANES

	TOTAL AM		PEAK PM	
GROUP	277	17	36	
	4652	605	367	
	753	42	96	

12 HOURS TOTAL
ENTERING INTERSECTION

VEHICLES 17,028

PEDESTRIANS 94

(INCLUDING 30 SCHOOL CHILDREN)

SPEED SUMMARY

NOT TAKEN

DIRECTION

NO. VEHICLES

LOCATION TAKEN

POSTED SPEED

MAXIMUM

AVERAGE

PACE

CRITICAL

DATE

DATE _____ TIME _____ TO _____

4TR903

NO. OF LANES

ALL PEDESTRIANS:			SCHOOL CHILDREN		
TOTAL	AM	PM	TOTAL	AM	PM
74	5	3	11	4	1

SCH CH PEAKS

AM 7:30 - 8:30

FM 4-5

LEGEND

☐ PROPERTY DAMAGE ONLY

INJURY

● **FATALITY**

ACCIDENT SUMMARY

3.86 YEARS FROM 1-1-78 TO 11-1-81

YEAR	TOTAL NO.	DAMAGE CLASS			ELEMENTS				WET	DAY-LITE	DARK	COURSE OF VEHICLES				NO. PERSONS	
		FATAL	INJ.	PROP.	PED.	BIKE	MULTI-VEH.	SOLO				XING	REAR END	LEFT TURN	OTHER	KILLED	INJURED
78	10		2	8			10		1	8	2		1		1		2
79	2			2			2			2			1		1		
80	3		2	1			3			2	1	2	1				2
81 NCV II	5		1	4		1	4		1	4	1	1	2		2		1
TOT.	20	0	5	15	0	1	19	0	2	16	4	5	6	1	4	0	5

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic - See Note 2)

URBAN _____ RURAL <u>X</u>		Minimum Requirements EADT			
1. Minimum Vehicular Satisfied <u>X</u> Not Satisfied _____		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach Route 12 Petaluma Ave Major Street Minor Street		Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
<u>2 or more</u>	<u>2 or more</u>	9,600	13,500 <u>6,720</u>	3,200	8,200 <u>2,240</u>
1	2 or more	8,000	5,600	3,200	2,240
2. Interruption of Continuous Traffic Satisfied <u>X</u> Not Satisfied _____		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach Major Street Minor Street		Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
<u>2 or more</u>	<u>2 or more</u>	14,400	13,500 <u>10,080</u>	1,600	8,200 <u>1,120</u>
1	2 or more	12,000	8,400	1,600	1,120
3. Combination Satisfied _____ Not Satisfied _____ <u>No one warrant satisfied but following warrants fulfilled 80% or more</u> _____ 1 _____ 2		2 Warrants		2 Warrants	

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

